A JOINT STUDY FUNDED UNDER THE
CANADA / NEWFOUNDLAND
SUBSIDIARY AGREEMENT FOR PLANNING

ARGENTIA INDUSTRIAL AREA STUDY

VOLUME 1 — REPORT

NEWFOUNDLAND DESIGN ASSOCIATES LIMITED
AND ASSOCIATED FIRMS

GOVERNMENT OF NEWFOUNDLAND
AND LABRADOR
DEPARTMENT OF DEVELOPMENT

GOVERNMENT OF CANADA
DEPARTMENT OF REGIONAL
ECONOMIC EXPANSION

ARGENTIA INDUSTRIAL AREA STUDY

VOLUME 1 - REPORT

December 1982

A Joint Study Of The

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
DEPARTMENT OF DEVELOPMENT

And The

GOVERNMENT OF CANADA
DEPARTMENT OF REGIONAL ECONOMIC EXPANSION

Prepared By

NEWFOUNDLAND DESIGN ASSOCIATES LIMITED

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January 19, 1983

Barbara Wakeham
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Department of Development
Government of Newfoundland & Labrador
P. O. Box 4750
St. John's, Newfoundland
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Dear Ms. Wakeham:

RE: ARGENTIA INDUSTRIAL AREA STUDY
Our File: 2007

We are pleased to forward 25 copies of our final report (Volume 1 - Report and Volume 2 - Appendices) on the above study.

You will appreciate that many issues and possible directions have surfaced as a result of this study and it was not possible to deal with them adequately with a single development plan type of document. A very important issue is the resolution of the question of the Canada-United States Sublease Agreement in terms of having the troublesome right of re-entry clause deleted or modified.

The report presents three master concepts for development which are based on three levels of re-entry clause removal. Any number of variations between concepts are possible provided the logical use indicated for the various sectors of land is generally followed.

This report is therefore a development framework document as well as a land-use document, as it has to deal with the complexities of the situation and the numerous variations with which government could be called upon to formulate policy. More detailed planning and engineering work is recommended as events unfold.

We wish to thank you and Mr. Brian Dick of D.R.E.E. and the members of the Steering Committee for your guidance and assistance during the work.

.....2

95 BONAVENTURE AVE., ST. JOHN'S, NEWFOUNDLAND, A1B 2X5, TELEPHONE (709) 726-4490

Our group of associates are pleased to have participated in this important study and we trust that this report will contribute towards realizing the full potential of the Argentia site.

Respectfully submitted,

NEWFOUNDLAND DESIGN ASSOCIATES LIMITED

REX T. PARSONS, P. Eng.
President

RTP/jh
Enclosures

This study is funded jointly by the DEPARTMENT OF DEVELOPMENT and the DEPARTMENT OF REGIONAL ECONOMIC EXPANSION under the Subsidiary Agreement For Planning of the CANADA/NEWFOUNDLAND General Development Agreement.

ARGENTIA INDUSTRIAL AREA STUDY

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I - INTRODUCTION

Following redefinition by the U.S. government of its military role on the East Coast in the mid-seventies, some 430 hectares (1,000 acres) of the northern part of the Argentia base were returned to Canada. It was not until recently, however, with the development of offshore hydrocarbons, that the attractiveness of the site area became apparent. Its natural physical attributes, geographical location, particular on-site facilities and services all combine to give the site certain positive advantages for future industrial development.

There are, however, certain issues (e.g. split jurisdiction, deterioration of fixed assets) which must be addressed and resolved with some urgency. Not the least of this is the preparation of a land use plan that would maximize the social and economic benefits arising from such a development.

Our group of associated firms has been selected to develop a conceptual land use plan for the Argentia site. This report presents three land use development scenarios for consideration. These can only be conceptualized at this stage; resolution of various issues will ultimately determine the scope and details of the final land use plan.

In order to be effective, the planning process should be dynamic - one that is regularly updated and reviewed in the light of changing circumstances. As the review process unfolds, the Department of Development should start to move to the next stage, namely the preparation of a detailed land use development plan.

We are pleased to have participated in this important study and wish to thank all those who contributed to the effort. We particularly appreciate the understanding and support received from Ms. Barbara Wakeham, Mr. Brian Dick and the members of the Steering Committee.

The study was directed by Mr. Rex Parsons and managed by Mr. Len Kostaszek. Key team members consisted of:

- Newfoundland Design Associates Ltd. (Rex Parsons);
- Leonard & Partners Limited (Len Kostaszek);
- Colin Karasek Limited (Colin Karasek);
- NORDCO (Roger Pearson);
- Williams & Smith Associates Ltd. (John Williams);
- RDC Limited (E.P. Henley);
- Albery, Pullerits Dickson & Associates (K. Pullerits).

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 1

List of Preferred Offshore Development
Sites Identified by the Provincial Government

A. PERMANENT SUPPLY/SERVICE BASES:

- Argentia
- Bay Roberts
- Botwood
- Harbour Grace
- Seal Cove
- St. John's

B. STEEL PLATFORM CONSTRUCTION:

- Argentia
- Botwood
- Bull Arm
- Corner Brook
- Mortier Bay

C. CONCRETE PLATFORM CONSTRUCTION:

- Bull Arm
- Come By Chance
- Corner Brook
- Hall's Bay

D. SATELLITE SUPPLY BASES:

- Carmanville
- Happy Valley - Goose Bay
- Hopedale
- Long Pond - Manuels (1)
- Main Brook
- St. Anthony

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(1) Although Long Pond has been included in this group, its primary function will be to provide overflow capacity for the Port of St. John's.

II - OBJECTIVES OF THE STUDY

In March 1981, the Minister of Development announced that various preferred sites had been selected, on the basis of social and economic considerations, to best meet the needs of three petroleum-related developments.(1) These designations are shown in Exhibit 1 opposite. The Argentia site was designated as having potential qualities to become a permanent supply/service and steel-rig platform construction base.

Given the physical attributes of the Argentia site, including the facilities and buildings left there by the departing U. S. military, the Department of Development has received inquiries for utilizing these facilities to service the offshore industry. The Department recognizes that if Argentia is to become a major marine and industrial facility, then it is imperative that an industrial land use development plan for the area be quickly established. Without this plan, the Province cannot effectively respond to industrial location requests in such a way as to maximize social and economic benefits.

At the present time, the Province is considering a number of proposals related to the development of supply, service and fabrication areas to serve the offshore oil and gas exploration and production activities. This, coupled with the revitalization of the fishing industry, is expected to place increased demands on physical facilities and services throughout the Province, and more particularly those located in the Avalon Peninsula.

In addition to these major developments, the transportation of goods and the provision of services will become major development criteria to be considered in planning future industrial and

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(1) Press release by The Honourable H. Neil Windsor, P. Eng., Minister of Development, March 3, 1981.

economic growth. The Department has already indicated that it has received a number of inquiries from interested parties to locate in the Argentia Peninsula. In order to effectively respond to these requests and to ensure that optimum use of existing facilities and resources is made, a master land use plan is urgently required for the Argentia industrial site.

BROAD STUDY REQUIREMENTS

The broad rationale and purpose of the study can be stated in the following relevant points:

- given the fact that offshore exploration and production will demand back-up facilities and services;
- given the fact that interest has already been expressed by various industrial developers in the Argentia industrial site;
- given the fact the Argentia site will be in competition with other potential sites in the Avalon area;
- given the natural attributes of the Argentia site (e.g., ice-free and deep harbour) as well as in-place facilities, infrastructure and services;
- in light of the above factors, the study should determine the types, magnitude of and requirements for ocean-oriented industries which would see an advantage in locating on the Argentia site and, on this basis, prepare a development master land use plan which would provide for optimum use of the land and facilities already in place, and at what order of magnitude of costs.

SPECIFIC
OBJECTIVES

The specific study objectives, as stated in the Terms of Reference (see Appendices), are:

> "(1) To identify the type and variety of offshore and ocean-oriented industries which could potentially locate within the Argentia Industrial Area.
>
> (2) To categorize these industries according to their physical land-use requirements as it relates to topography, lot size, water and sewerage, electrical supply, proximity to harbour, airport, road, rail and other transportation facilities, buildings, etc.
>
> (3) To produce a detailed development plan for the Argentia Industrial Area, dividing the available land and facilities into zones according to its suitability for various types of ocean-oriented industrial activity.
>
> (4) To identify any improvements to the infrastructure or facilities at Argentia that may be required in order to accommodate the future development of the Argentia Industrial Area for offshore and ocean-oriented industries."

III - EXECUTIVE SUMMARY

INTRODUCTION

1. In 1978, the U.S. government under the Treaty Series 1978, No. 14 (referred to as the Transfer Agreement) returned part of its Argentia naval-military base to the Canadian Government subject to several covenants. The property consisted of 432 hectares of flat land, runways, wharves, ice-free deep harbour, numerous buildings and municipal infrastructure facilities.

2. Following that time very little industrial activity has taken place to utilize the potentially attractive assets. As a result, many of the buildings have undergone various stages of deterioration; municipal services are either in poor shape or discontinued; and some of the facilities have become inoperative. However, with the advent of the offshore activity, new industrial development possibilities have emerged to indicate that the Argentia site area could play a major role under certain conditions.

3. Proposals by private developers have been received by the Department of Development for parcels of land which would be used for various functional uses. Each, of course, has expressed concerns about the covenants that exist on the Transfer Agreement. These covenants represent a serious obstacle to any future development since they preclude security of tenure. Consequently potential investors may not be prepared to risk financing their projects in Argentia under these conditions.

OBJECTIVE OF STUDY

4. Given the fact that offshore exploration and production will require backup facilities and services; and given the fact that interest has already been expressed by various industrial developers in the Argentia industrial site; and given the fact that the provincial government is interested in encouraging industrial development and deriving the optimum social and economic benefits in the local areas and the province as a whole; therefore:

5. The Department of Development commissioned this study to be undertaken to determine the types and magnitude of

requirements for ocean-related industries which could advantageously be located in Argentia and under what conditions. On the basis of this analysis, (a) to prepare a master land use plan concept which would optimize existing land and facilities, (b) outline what some of the key constraints are and (c) identify what order of costs may be required to facilitate industrial development in terms of necessary infrastructure.

OVERALL FINDINGS AND CONCLUSIONS

6. After careful analysis, we conclude that the most likely prospects for significant development for the Argentia site area are tied in to the offshore activity in the short term, e.g., fabrication yard, supply base. In the longer term (10 years) the picture becomes less clear. However, the possibility of a major petrochemical complex/storage area does indicate interesting possibilities. Obviously, this will depend on a large range of circumstances and decisions such as: government offshore development policies, world demand for hydrocarbon products and derivatives, to name just a couple. In both the short and long terms, other minor but nevertheless important secondary industrial activities could accompany the above major developments.

7. While the above development prospects appear encouraging, one of the major constraints among others is the right of the U.S.A. to re-enter and occupy the entire site with short notice and without any compensation. This presents a major obstacle to any major investment plans by potential developers, as well as to government investment plans for municipal & harbour infrastructures that may be required. As a consequence, it has one of the most significant bearings on the type of land use plan that is finally adopted. Three alternative land use concept plans (namely; full, partial and temporary) have been prepared and are identified in the report.

8. Also there are two other major issues affecting the future development of the site. The first deals with institutional barriers which require resolution, e.g., division of government jurisdictions. The second is the cost of providing infrastructure rehabilitation/construction through either the public and/or private sectors - a cost which could be considerable. Once the above key issues (Item 7) are resolved, the other two key issues will require urgent attention.

9. Realization of the full potential of the Argentia site will not come automatically. It will still have to compete on local, regional, national and international levels. Its competitive edge will depend on when and how well the site advantages are developed and promoted on the one hand, and how effective the government is in reducing or eliminating the site constraints on the other. Developers have shown interest in Argentia, and this is encouraging. However, if development is to proceed rapidly, it will be necessary to put into place a detailed industrial development plan and strategy for the site as a whole, as well as quickly resolving administrative and jurisdictional questions. Failure to do so could lead to severe conflicts and act in retarding the full realization of the site potential in an efficient and orderly manner.

10. Vigorous efforts are therefore required on the basis of the findings of this report to:

a) proceed from the conceptual development to a detailed land use planning process;

b) integrate the detailed land use planning process within an overall national, regional and local industrial offshore development framework;

c) develop an overall coordinated strategy for enhancing the attractiveness of the site with special attention given to identifying a negotiating strategy to correct institutional barriers; to structuring a single mechanism to promote and administer the site area; and to outlining a marketing campaign perhaps coupled with incentives to fully develop the Argentia site;

d) establish a land use planning process which can provide continuity and make adjustments on a regular basis to meet changing circumstances, e.g., updating zoning bylaws, regulations, land use function designations, and resolving conflicting alternative uses;

e) establish a developmental timetable for the above process showing necessary inputs/outputs by all levels of appropriate government and private sectors, target objectives and milestone dates, interfacing between various agencies and organizations, etc.

SITE CHARACTERISTICS

11. Argentia site area consists of some 432 hectares of flat land, numerous warehouses and hangers that are in various states of disrepair, ice-free deep harbour containing 814 metres of wharf which needs upgrading, road/CN rail and ferry services, municipal services which require refurbishing, and three runways which presently are in poor condition.

12. When the site was turned over to the Canadian Government, a small portion of land was taken by the Coast Guard operations and the Ministry of Transport, including most of the usable wharf and adjacent back-up lands. The balance of the available property, over 400 hectares, was delegated to the province for administrative functions. A few of the buildings and facilities (i.e., underground storage tanks) are presently under a short-term lease arrangement to private operators for general storage purposes. Very limited secondary manufacturing presently exists on the site.

13. The Argentia site was designated by the provincial government in 1981 as a possible site for a supply base and/or a fabrication yard.

14. Under the Treaty Series No. 14, the U.S. Government has included several covenants which allow them to control entry to the site including the airfield and shipping approaches and wharves. Any proposed changes must be approved by the U.S. Base Commander. He, in turn, would forward the proposals to the appropriate authorities in the United States.

15. These barriers and constraints pose serious handicaps to realizing the future potential of the Argentia site area.

DEVELOPMENT OPPORTUNITIES

16. Development opportunities were examined for both the short and long term in relation to an assumed market segment that would be in close proximity to the Argentia site area. Obviously, the long-term possibilities are less focussed since they will depend on the extent and magnitude of offshore development. Our assessment indicates that the major development

opportunity for the short term lies in offshore support-oriented activities followed to a lesser extent by light secondary manufacturing/service-oriented industries. In the longer term, possibilities exist for some type of a petrochemical complex/hydrocarbon storage farm.

17. Fabrication yard. Our investigations indicate that several fabrication yards could be required particularly in the development of the Hibernia field alone, and consequently the Argentia site holds excellent promise. It could accommodate either several small yards (module fabrication) or one or two very large yards (integrated steel deck). The site is also ideally located adjacent to Come-by-Chance which could become a centre for constructing fixed concrete gravity bases for offshore production platforms. While preliminary at this stage, the magnitude of development over ten years would entail an investment of some $30 million (1982) plus infrastructure costs.

18. Supply base. The potential for Argentia to become a significant supply base holds only little promise depending on the pace of offshore oil development but this will also depend on the extent to which the provincial government promotes it and to what extent the port of St. John's increases its port utilization and enlarges its functional uses as an offshore supply base. At the present time, our calculations indicate that the port of St. John's could significantly increase its capacity to service offshore drilling rigs, with modest investment in and modifications to present wharf facilities and this could serve a substantial level of offshore oil activity. Provision, nevertheless, has been provided for the Argentia site to accommodate a smaller scale service base with the possibility to expand to a major supply base. Total potential investment over the 10-year period for the latter would be in the order of $10 million (1982) plus infrastructure costs.

19. Other development possibilities. Other functional areas such as a light industrial park, boat building, fish processing, fish storage and trans-shipment, aircraft and helicopter uses appear reasonable possibilities in the short term. Use of Argentia as a designated alternative to St. John's Airport is technically possible; however on the basis of economic considerations does not appear to be fully justified particularly in light of the major upgrading in navigational systems recently installed at St. John's Airport.

The potential for a Ro-Ro operation was examined for the Argentia site, however, within the context of offshore and ocean-related development, the prospects for a major Ro-Ro operation does not appear to be very high. In actual fact, CN Marine are presently faced with an uneconomical Ro-Ro operation and are looking at ways and means of increasing substantially the utilization of their present facilities on the Argentia site. This does not preclude the possibility of other goods such as agricultural products being shipped through Argentia should some interests determine it feasible.

20. Long-term opportunities. In the longer term, a major land use consideration could be for a petrochemical complex or something of a similar vein (e.g., oil/LNG storage and trans-shipment, bulk handling and commodity products, to name just a few). This type of development should be sufficient to create an impetus for secondary light manufacturing/servicing industries. This whole area likely requires further investigation to determine its possible development parameters. Investment in such a complex could be well over a billion dollars, if full development occurred.

21. The realization of these opportunities will depend to a large degree upon whether the existing constraints can be alleviated (e.g., re-entry clause).

ALTERNATIVE DEVELOPMENT CONCEPTS

22. Based on the above information, three land-use development concepts have been prepared based mainly on complete elimination of the re-entry clause (Concept 1); partial elimination of the re-entry clause (Concept 2); and no elimination of the re-entry clause (Concept 3). Land use for each concept could therefore be allocated as follows:

Major Land Use Functions	Concept 1 (hectares)	Concept 2 (hectares)	Concept 3 (hectares)
- Petrochemical complex	247	-	-
- Fabrication yard	88	82	-
- Supply base	46	182	280
- Helicopter*, runways and support	9*	117	117
- Industrial park	7	7	-
- Other	35	44	35
TOTAL	432	432	432

Concept development schemes are shown in Exhibits 31, 32 and 33.

23. The present fleet dock area poses a potential problem since the existing functions carried on currently would conflict with proposed land use schemes. The relocation of these functions to a designated light industrial park appears to offer one solution. However, the economies of doing so require further examination.

24. The land use planning exercise must incorporate the highest level of flexibility possible. As the planning process moves from the conceptual stage to a detailed planning stage, all options should be kept open for as long as possible to reflect changing circumstances and emerging opportunities.

PRESENT STATE OF INFRASTRUCTURE AND COSTS

25. In general, the infrastructure (including municipal services, utilities, transportation) appears to require various levels of refurbishing. In some cases the final level of infrastructure required will depend on the ultimate development scheme adopted for the Argentia site.

26. A summary of "order of magnitude" infrastructure capital costs are presented below along with the possible major items of expenditure.

	(million 1982 dollars)		
Cost Range	Concept 1	Concept 2	Concept 3
Low	$28.0	$12.0	$ 9.0
High	52.0	36.0	9.0
Major Items of Expenditure			
- Dunville by-pass road	X	X	-
- Fleet dock refurbishing	X	X	X
- New tanker wharf	X	-	-
- Maximum dredging for fabrication yard	X	X	-
- Dredging harbour approach channel	X	-	-
- Major water supply	X	-	-
- Runway refurbishing	-	X	X
- Municipal services refurbishing	X	X	X

27. It should be clearly noted that the above cost estimates are very preliminary based on an examination of the site, review of mainly outdated engineering reports done for different objectives and our present engineering perceptions of what would likely be needed for the various concepts. Without more detailed engineering study towards the present objectives, care should be taken in assuming too high a degree of accuracy in these figures. Internal costs of services on the developer's property have been considered as part of the investors' development costs and are not included in the above estimates.

STRATEGIC DEVELOPMENT CONSIDERATIONS

28. While the Argentia site has strong prospective development in certain areas, both in the short and long term, major work is required to resolve conflicts in land use designation. Of even greater importance is resolution of:

    (a) the existing U.S./Canada covenants, and

    (b) different government jurisdictional areas.

29. This means, in the short term, to enable development to take place, a strategic negotiating structure and position is urgently required. This cannot be done on a piecemeal basis, but only as part of a comprehensive and well co-ordinated approach through a mechanism that will allow resolution of outstanding constraints quickly and efficiently. As part of this strategy, the government(s) may wish to consider some form of risk assurance as a means of offering protection to the prospective developer(s).

30. The simple fact that Argentia is strategically located does not necessarily lead to industrial development in today's economy. It is in direct competition with local, regional, national and international interests, all vying for "part of the action". To try to promote Argentia in any major way with the present existing constraints would be very difficult. Changes must be made now if Argentia is to get a competitive edge.

31. Governments can play a major role in encouraging industrial development but it requires organization, agressive promotion and incentives, market intelligence, ability to respond faster than competitors and, above all, a well defined and thought out strategy. To carry out this in an effective way, an appropriate integrated organizational structure would be necessary. The Nova Scotia Crown Corporation Industrial Estates Limited could be a guide in setting up such an agency. Without a commitment made to these development principles, it is unlikely that detailed planning and evaluation would accomplish anything significant.

ARGENTIA SITE STUDY
ATLANTIC PROVINCES CONTEXT
Exhibit 2

IV - STUDY SETTING AND APPROACH

Numerous studies have been carried out on various aspects of offshore development. As a result, a host of potential opportunities have been identified. Many will depend on such decisions as the type and design of delivery systems. These decisions, in turn, will determine the extent of industries that could be located in Newfoundland.

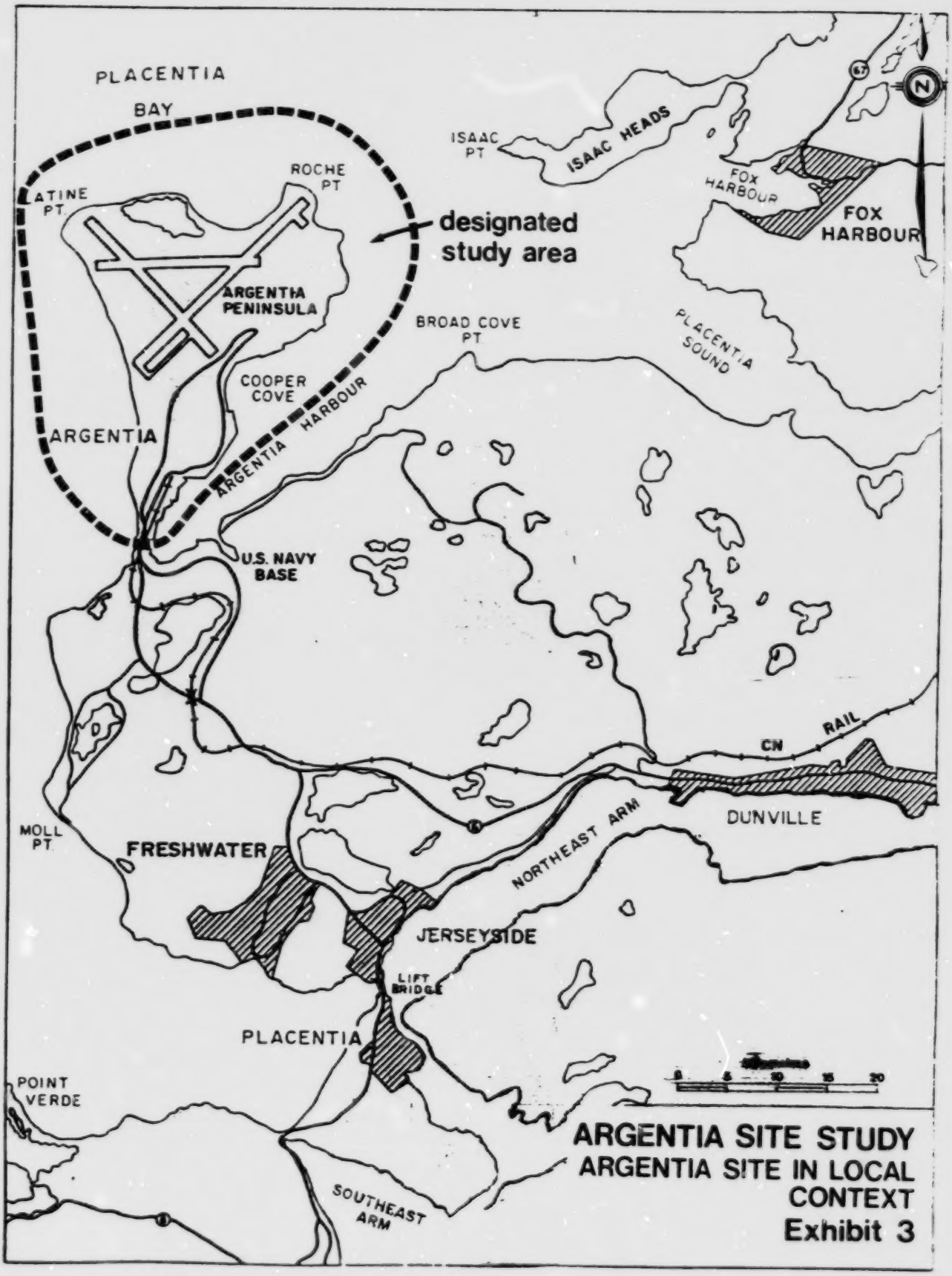
To fully appreciate the planning process involved, a short section on the historical setting and the characteristics of the Argentia site is included as a background framework. This is followed by a description of the work program and methodology, report structure and qualifications that should be borne in mind in interpreting this report.

HISTORICAL BACKGROUND

The Argentia site is located on the southwest coast of the Avalon Peninsula, on the east side of Placentia Bay. By road or rail, it is approximately 130 kilometers from the City of St. John's. Exhibit 2 opposite locates Argentia within the Atlantic Provinces. In addition to being ideally situated with respect to offshore development, the Argentia site is at the epicentre of Marystown (shipbuilding yard), Come By Chance (oil refinery) and the City of St. John's (major offshore service and supply centre). On a Canadian Hydrographic Service Chart No. 4614, the exact location is latitude 47°17'55" and longitude 53°59'05".

Status of Site

Under the Leased Naval and Air Bases Agreement with the United States and Canadian governments, which was signed on March 27, 1941, the Argentia Peninsula was leased to the United States of



ARGENTIA SITE STUDY
ARGENTIA SITE IN LOCAL CONTEXT
Exhibit 3

America for a period of 99 years. The site was developed as a major naval base with an air station capability during World War II, reaching its peak of military activity in the early sixties.

The major military base drew heavily upon civilian support from the surrounding communities for construction and operating labour. The surrounding communities, in turn, came to rely upon the base itself as a source of employment. This reliance resulted in significant growth in these communities and a change in the orientation of the local economy to a service industry from their traditional resource-based economy (i.e., fishing, forestry).

Changes in technology and in the world political environment resulted in a redefinition, in the sixties, of the military "mission" of the Argentia base. This was followed by a drastic reduction in the scope of the military presence, with a consequent reduction in civilian employment. By this time, only the larger industrial-type buildings remained and these were in various stages of advanced disrepair. Some of the wood-frame buildings had been demolished, and the process of consolidating the U.S. military operations was established on the "South Side" of the Peninsula. Exhibit 3 opposite illustrates the Argentia site within the local context.

Subsequent curtailments continued in the early seventies, with the "North Side" (the Argentia Peninsula) being abandoned in early 1975. At the present time only a limited U.S. role is maintained on the South Side of the Argentia Harbour.

An initiative was undertaken by the Government of Newfoundland and Labrador which, in 1978, resulted in the North Side being transferred back to the Federal Government of Canada subject to a number of covenants. These covenants are set out in "TREATY SERIES 1978 NO. 14", otherwise known as the Transfer Agreement.

Of the key covenants, the following are relevant for considering the future development of the Argentia site:

(a) Re-entry

The U.S. may re-enter the property immediately in the event of war or a national emergency or otherwise, as may be agreed between Canada and the United States.

The sub-lease agreement does not provide for a notice period in the latter case nor for compensation for losses to dispossessed tenants in either case.

(b) Airfield

The airfield area cannot be used for purposes which would preclude its use as an airfield nor may structures be erected which would violate the "airfield zoning regulations".

(c) Approval by the Base Commander

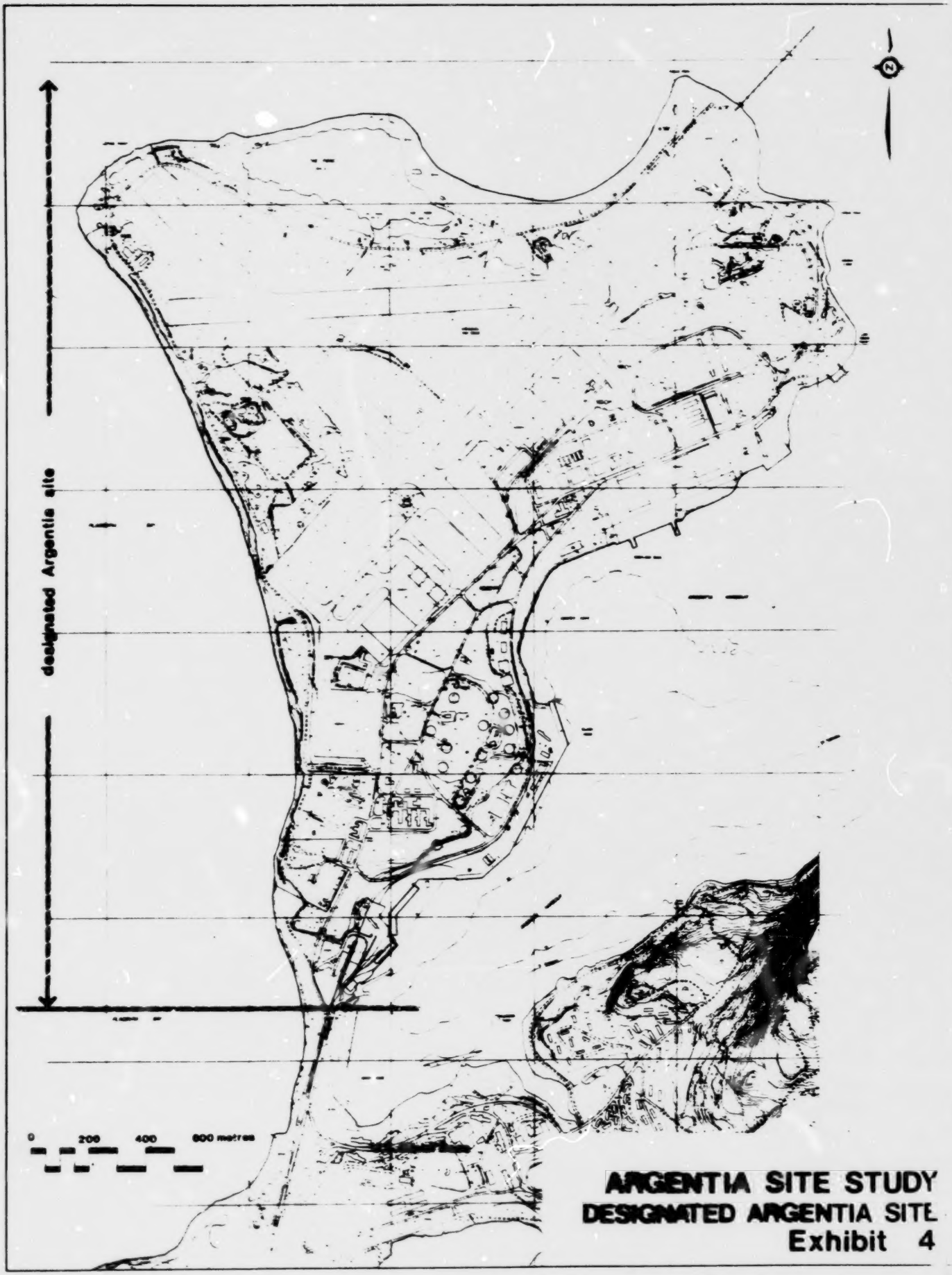
The Base Commander must approve all use of the lands and has limited discretion to veto uses which he considers would violate base security or which might interfere with his communications.

(d) Shipping Restrictions

The United States has retained the right to restrict shipping in the marine approaches to the area. This refers primarily to East Bloc shipping.

Of all the covenants, the re-entry provisions represent a very serious obstacle to any future development because, without security of tenure, potential investors cannot obtain financing for their projects nor are they willing to place their equity at risk.

The Federal Government of Canada, in turn, transferred some of the area to Newfoundland, but retained control of the harbours, wharves and marine traffic.



ARGENTIA SITE STUDY
DESIGNATED ARGENTIA SITE
Exhibit 4

ARGENTI

Transport Canada was designated as the Management Authority by the federal government, and the Government of Newfoundland and Labrador nominated the Department of Development to administer the area. The Department of Development has delegated local management of buildings and area leases to the Newfoundland and Labrador Housing Corporation.

SITE CHARACTERISTICS

Exhibit 4 opposite shows the overall layout of the Argentia site as it existed just prior to the time the U.S. government turned the site over to the federal government. A large-scale map of the site is attached to this report, and an aerial view is shown in Exhibit 5 opposite.

Very briefly, the major advantages of the Argentia site can be summarized as follows:

- approximately 432 hectares of open flat land available;
- numerous vacant warehouses and hangars;
- ice-free deep water harbour with good depths;
- direct, paved highway link to St. John's (130 km);
- services by CN Railway and CN Marine Ferry;
- airstrip;
- approximately 2,700 feet of wharves;
- not within the boundaries of any of the five surrounding municipalities;
- not in close proximity to any residential areas.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 6

RELEVANT PARAMETERS OF THE ARGENTIA SITE

Item	UNITS Metric	UNITS Imperial
1. Land Area	432 ha	1,066 acres
2. Wharves/Docks		
- fleet wharves with 24-34' water at LWOST	814 m	2,672'
- CN wharf with depth at 25'	127 m	416'
3. Harbour		
- protected harbour	202 ha	500 acres
- protected area (entire Bay)	769 ha	1,900 "
- channel depths	13 m	42'
- channel width at 33-ft. width	305 m	1,000'
- maximum wave height	1.2 m	4'
- operating capability	ice-free, year round	
- seabed condition	rock, mud, sand	
4. Proximity to current drilling/ production activity	200 km	325 miles
5. Topography of Site		
- site	flat	
- soil	hills and clay	

ITEM	UNITS Metric	UNITS Imperial
6. Airport		
- runway length/width	1900 x 61 m	6,000 x 200'
- surface type	concrete	
7. Infrastructure Services		
- transportation modes	rail, air, road, sea	
- freshwater now/ potential	350,000 U.S. gals./day with potential for 1.3 million U.S. gals./day	
- ferry service	CN Marine Ferry	
- municipal services	sewage, storm drainage	
- roads	Macadam pavement	
8. Community Profile		
- local communities within 5 mile radius	five	
- population (1980)	8,000 (est.)	
- labour force	2,000 (est.)	
- retail and commercial establishments	34	
9. Facilities		
- size range of warehouse/ hangers, etc.	930m^2 to 9,300m^2	10,000 sq.ft. to 100,000 sq.ft.
- underground storage (tanks)	fifteen	
- size of each tank	27,500 U.S. barrels	

Coupled with this are certain factors that would have to be corrected in order for them not to detract from the above advantages:

- existing buildings and wharves need upgrading and reconditioning;
- certain U.S./Canada agreement covenants must be altered in order to encourage capital investment;
- appropriate municipal services must be restored to acceptable standards.

It should be noted that the wharves and buildings have been allowed to deteriorate since the U.S. government pulled out. Some are presently being used by both public and private sectors on a short-term lease arrangement. Other buildings are simply beyond restoration. This whole subject matter is discussed in more detail further on in the report.

Site Parameters

The relevant parameters of the site are highlighted in Exhibit 6 opposite. These are some of the parameters used by the Department of Development to arrive at an attractiveness rating for various sites to serve offshore development.(1)

APPROACH AND METHODOLOGY

The future of the Argentia site will depend, to a large degree, on how offshore oil and gas and ocean-related developments are perceived. While certain industrial development opportunities will become more apparent than others, it will be important, particularly in light of the present uncertainties surrounding the offshore, to maintain the highest degree of flexibility in

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(1) Department of Development, Site Locations for Onshore Petroleum-Related Developments - Preliminary Analysis of Sites, February 1981.

conceptualizing an appropriate land use plan so that adjustments can be made as circumstances dictate.

In order to provide some approximation of the impacts on Argentia, a particular approach based on demand interpretation has been adopted to:

(a) establish general categories of development possibilities;

(b) assess the requirements associated with the above development possibilities;

(c) review the capability of the Argentia site to meet these requirements;

(d) identify the types of adjustments (e.g., site, facilities, etc.) to be made and at what order of cost.

Sequence of Steps

The sequence of steps followed by the study team in developing alternative industrial land use concepts is based on the experience in North Sea offshore development, substantiated by the opinions of knowledgeable officials in the oil industry.

1. Broad Classification of Development Opportunities.

Two basic industrial development categories were identified as having some degree of impact on the Argentia site:

(a) oil and gas-related opportunities

* petrochemical complex;
* oil/gas storage in tank farm;
* supply/storage base;
* fabrication/construction yard;
* secondary manufacturing.

(b) ocean-related opportunities

* fishing-related activities (i.e., harvesting, production, storage, shipping);
* ocean-related secondary manufacturing;
* service-related institutions (e.g., training centre, Coast Guard services, etc.).

2. Forecast of Offshore Development Opportunities.

In order to forecast offshore development opportunities, the following offshore impacts were analyzed:

* oil and gas development, as outlined by the Petroleum Directorate;(2)
* provincial government policy on the rate of offshore development, designated development sites and their site characteristics;
* U.K. North Sea planning ratios and criteria.

While not excluding other possibilities, the focus has been on short-term opportunities such as a fabrication yard and a supply base.

3. Forecast of Ocean-Related Development Opportunities.

This component focussed on the fishing sector and possible related manufacturing industries.

Typical data examined included:

* fishery development plans and policies since the introduction of the 200-mile limit;
* examination of the possibilities for a primary distribution centre;
* light to medium manufacturing (e.g., boatbuilding).

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(2) Government of Newfoundland and Labrador and Petroleum Directorate, Economic Impact of Future Offshore Petroleum Exploration, May 1981.

4. Translation of Demand into Overall Requirements.

   On the basis of the results identified in the above items, the relevant requirements were identified and assessed. These were then compared against the ability of the Argentia site to reasonably meet the key requirements. Where hard data could not be developed, the experience in the U.K. North Sea was utilized.

5. Preparation of Alternative Development Concepts.

   Three alternative industrial land use development concepts were prepared representing three different scenarios (ranging from maximum to minimum industrial development). A development strategy which responds to the constraints that presently exist and an outline plan for realization were also prepared.

6. Assessment of Site Capability.

   For each development opportunity identified, the basic requirements were assessed in terms of existing facilities, infrastructure support services (i.e., water, transportation, sewerage, etc.), community infrastructure, environment and the like. Major shortfalls and/or adjustments were identified and some order of magnitude of cost associated with these changes provided.

7. Examination of Administrative and Jurisdictional Issues.

   In competing for a share of the industrial development action, certain institutional barriers will have to be overcome. Possible negotiating strategies are suggested.

INFORMATION SOURCES

The study team relied on published documents and reports, related experience in the U.K. North Sea, as well as on discussions with key officials from:

- Petroleum Directorate
- Department of Development

- College of Fisheries, Navigation, Marine Engineering and Electronics
- Department of Environment
- U.S. Naval Base
- Air Canada
- federal government: *Energy, Mines & Resources;
  *Ministry of Transport;
  *Coast Guard;
  *Environment Canada
- CN Marine
- potential developers from the private sector
- private fish processors
- National Harbours Board (St. John's)
- East Coast Petroleum Association
- major oil companies
- North Sea companies: *Seaforth Maritime;
  *ASCO;
  *BOC;
  *Kishorn.

A more complete listing of key contacts and sources of information is contained in each of the detailed individual reports.

REPORT
STRUCTURE

The nature of the work lent itself to drawing on special skills and expertise in specific work program areas. For each of the work components, separate reports were prepared. The findings and conclusions from each report were then digested and synthesized into an industrial land use planning concept.

To facilitate reading, the report is structured as follows:

1. Report (Volume 1)
   - includes a short but concise executive summary outlining the highlights of the study;
   - synthesizes the results of the detailed individual reports in terms of a planning approach.

2. Appendices (Volume 2)
   - includes the detailed individual reports on:
     * offshore development
     * fishery development;
     * airport;
     * infrastructure (municipal services, utilities, surface transportation, wharf facilities and order of costs).

QUALIFICATIONS AND INTERPRETATION

It is virtually impossible to predict opportunities over the next ten years with a high degree of accuracy. Offshore oil and gas reserves can be recovered by means of a number of different systems. The choice of systems and associated installations is determined by reservoir shape and size considerations; the amount of recoverable reserves; water depth and distance from shore; the proximity of other installations and the availability of onshore processing facilities; the location of the intended markets; the environment; and marine and fishing activity in the area.

These considerations and their associated constraints have necessitated a great deal of innovative thinking as to how the many technical problems can be overcome. From this has emerged a wide range of design alternatives (e.g., floating production platforms, fixed concrete systems, etc.) for field development systems. These alternatives vary widely in concept, shape, size, weight and construction material. This variation, in turn, is reflected in the diversity of the technology and the type of facilities required for their design and construction.

In view of the range of alternatives, we suggest that development of a land use plan for Argentia incorporate:

- a high degree of flexibility which allows for adjustments as circumstances and situations change;
- regular review and updating on a yearly basis.

The reader is cautioned against interpreting the industrial land use concept as a precise instrument of development. Given the level of information available and the uncertainty surrounding political decisions on development, this report can only present a conceptual development scheme. As offshore development plans become clear, detailed planning and engineering should be undertaken for progressive levels of detail. The most successful approach would be to obtain acceptance of the conceptual development scheme by major decision makers and land users. Detailed land use plans would only be done once the overall framework has been agreed upon.

Finally, the reader is cautioned against applying too rigorous a precision to figures than what they may actually represent. In some cases, due to the absence of hard data, judgements were made based on a qualitative rather than a quantitative analysis. Where this has been done, it is so identified in the report.

V - OFFSHORE DEVELOPMENT FRAMEWORK

Offshore exploration is the key to assessing the types of opportunities that may exist for Argentia. From the forecast of exploratory and development drilling activity (including the extent and rate of production development), planning ratios and criteria can be approximated. This chapter therefore examines the base of development expected for Newfoundland and Labrador offshore development. Of particular relevance, of course, will be the development of the Hibernia field, which lies in close proximity to the Argentia site.

BROAD DEVELOPMENT CATEGORIES

Based on discussions with officials from the Petroleum Directorate and Energy Mines & Resources, coupled with a review of existing literature, we have established two categories of industrial development prospects:

High Prospects

* fabrication yard;
* supply/storage base;
* fish processing and distribution centre.

Low Prospects

* petrochemical complex;
* ocean-related manufacturing activities;
* service centre (e.g., research/training centre);
* other institutional services.

Although the planning timeframe is generally regarded as ten years, it should be emphasized that these categories reflect the present situation. As stated earlier, periodic review and adjustment will be essential.

Each of these prospects is discussed in greater detail further in the report. As a broad statement, however, the offshore development prospects for Argentia will likely hinge upon the extent of offshore oil and gas:

- assessment of offshore petroleum potential, which would then dictate the extent of development exploration and production activities;
- government policy on the rate of offshore development and how the benefits of such development are to be distributed between local, regional and national interests.

Of course, there are other determining factors such as world oil prices, economies of developing oil fields and political considerations. However, given the growing energy demands, it is assumed that these will lead to positive development (e.g., the U.K. North Sea production is equivalent to all of Canada's petroleum production).

OFFSHORE PETROLEUM DEVELOPMENT GUIDELINES

The demand for goods and services is dictated by the extent of offshore activity that is undertaken and is represented by the number of well drillings, exploration and development. In our analysis we have adopted the Petroleum Directorate's ten-year forecast. Their forecast of the number of exploratory wells to be drilled has been made over a ten-year forecast period, 1981 to 1990. Insofar as the development and production of oil/gas fields, we have relied heavily on the U.K. North Sea experience.

Three levels of exploration activity have been forecasted:

- FEP (federal energy program);
- Low case prepared by the Petroleum Directorate;
- High case prepared by the Petroleum Directorate.

These forecasts are reproduced in Exhibit 7 for the Province as a whole, and more specifically for the Grand Banks. The latter obviously is in closer proximity to the Argentia site and, hence, represents the area that would have the most impact for the designated development site.

EXHIBIT 7

Forecast of the Number of Exploration Wells (1981 to 1990)

Period	Northern & Southern Grand Banks			For All of Newfoundland and Labrador		
	FEP	Low	High	FEP	Low	High
1981 to 1990	34	73	129	63	154	279
Average/year	3	7	13	6	15	28

SOURCE:
Department of Development and the Petroleum Directorate, Economic Impact of Future Offshore Petroleum Exploration, May 1981.

For planning purposes, we have taken the high case for determining the demand requirements for goods and services arising from the above exploration activity level. Insofar as production is concerned, it is a reasonable estimate that the Hibernia field would be the first developed and that the rate of subsequent fields coming into production would likely be, at a minimum, three-year intervals on a sustained basis.

It should be noted that the U.K. offshore proven oil reserves and equivalent is almost equal to those in Newfoundland and Labrador offshore areas. Thus their rate of development was more accelerated (i.e., approximately 34 oil and gas fields were put into production with a ten-year period).

Based upon the anticipated number of wells forecasted to be drilled over the ten-year period, the report provides detailed information on the quantities of goods and services by major expenditure item, manpower requirements, wages and salaries, etc.

Of particular significance is the Grand Banks. The range of wells to be described is forecasted to range from 34 to 129 over the ten-year period.

The above figures have formed the basis of our calculations for determining the extent and need for both a fabrication yard and a supply/storage base. In the latter, it is recognized that the Port of St. John's plays a significant role as an existing supply base.

Basic Assumptions Made

In summary, therefore, the planning guidelines established to estimate demand/requirements for offshore are based on the following:

(a) Controlled Rate of Development.

From discussions with government officials, it is believed that a reasonable assumption is that the rate of development will be controlled so that each field would be developed and brought into production sequentially.

(b) Levelling Off in Exploration.

Given the enormous investment in exploration and the urgency to obtain a direct cash flow, it is believed that the rate of exploratory drilling will level off until oil and gas fields are brought into production.

Therefore, we assume that this will be the case with the Hibernia field. This has important implications on the expected future growth and requirements for supply bases.

It should be noted that while 34 oil and gas fields were brought into production in the U.K. North Sea, some of the new fields discovered have been delayed in being brought into production due to clarification of government policy (controlled growth) in light of weaker world oil prices.

(c) Production Platforms.

While in the North Sea steel towers fixed with piles were the common structural system for production platforms, a number of concrete gravity production platforms were also built. Recently, the provincial government has announced its support[1] for the use of concrete gravity systems. The significance of this is that four sites in Newfoundland can provide the harbour depths to accommodate such construction. One of the four sites is Come By Chance, which is in close proximity to Argentia. This has implications insofar as a fabrication yard is concerned (detailed discussions on this matter are outlined in the following chapter).

(c) Accelerated Rate of Development Example.

Up to the end of 1980 in the U.K. offshore waters, there has been a total of 111 significant hydrocarbon discoveries, but only 34 of these have been placed into production. This would mean about three gas and oil fields were being brought into production every year. The U.K., particularly the East Shetland Basin, thus provides an appropriate model that typifies a rapid scale of development scenario. This is used to comment on recent developers' submissions and their requests for land in the Argentia site.

(e) Timing of Development Undeterminable.

The rate at which Hibernia develops is still unkrown; however a typical timeframe for building the first in a series of production platforms has been assumed based on the U.K. experience to be as follows:

Item	Approx. Timeframe (months)
- design	14
- fabrication	24[2]
- commissioning	14
Total	52 (4-1/2 yrs)

(1) Announcement made by The Honourable W.W. Marshall, Minister of Energy, in "The Daily News" dated September 1, 1982: article entitled Fixed Concrete Platforms are Favoured by Government.

(2) Probably a minimum period. For a new technology such as Hibernia, the timeframe could be much longer.

Exactly when production is to be commissioned for Hibernia has not been included in our assessment. On the other hand, we have assumed a long-term planning horizon (ten years), but with more specific planning objectives in the short term.

OCEAN-RELATED DEVELOPMENT

Of major importance in this category is the development of the Newfoundland fishery and whether any potential possibilities exist for Argentia. Hence, a major focus of our analysis in this component centres on the regional fishery development prospects.

"Prospects", in this report, is used in the broadest sense (e.g., harvesting, production, related manufacturing, etc.). Key assumptions include:

- two appropriate fishing zones covering about 40 fishing communities have been delineated for the inshore fishery: Placentia Bay area and the bottom portion of Trinity Bay. These zones are reasonably close in proximity to the Argentia base as well as lend themselves to utilizing the statistical data;
- offshore fishing activities are considered only for a small geographic zone in the Burin Peninsula since it would be in close proximity to the designated site area.

New industrial demands which might be related to ocean-related requirements have been assessed in terms of prospects for the Newfoundland industry as a whole. These include:

- potential light-industrial servicing and manufacturing activities, e.g., boat building;
- potential expansion of fish transshipment centre for export;
- fish processing industries.

There are also possibly other areas which are much less well defined that could have some potential possibilities for Argentia. These, to name just a few, could include:

- deepsea diving services;
- training centres for offshore personnel;
- firefighting and rescue;
- pipelaying operations.

However, because little is known at this stage (e.g., type of system to be used to deliver oil and gas into Newfoundland such as tankers or pipelines), investigations could not be conducted to the same level of detail as for the other topics. Provision, however, has been made to accommodate such possibilities in the conceptual land use plan.

Finally, the potential use of the existing runway was assessed from the point of view of servicing the offshore industry as well as being a designated alternative to St. John's airport.

Prime Focus of Investigations

In summary, the key broad categories in which some idea of future requirements are assessed can be narrowed down, based on available and known information, into the following key areas. It was felt, based on informed opinion, that these were the most likely possibilities in the short term that require further investigation:

(i) fabrication yard;
(ii) supply base;
(iii) fishery development;
(iv) airport base.

These requirements form the underlying basis of developing the land use plan concept. It is these sectors that, if established, would provide sufficient impetus in launching Argentia as an industrial site. Thereafter, support and auxiliary industries would tend to gravitate towards this centre.

While less information and greater uncertainty surround the following areas, making it more difficult to ascertain their requirements, we nevertheless provided a first approximation and included it in our planning process. Typically, this category could be considered more in line with long-term prospects and could include such items as:

* petrochemical complex;
* training centre;
* gas/oil tank farm;
* search and rescue;
* manufacturing/construction.

Items (i) to (iv) are discussed in some detail in this report; while all of these long-term items described above are discussed collectively.

VI - ASSESSMENT OF A FABRICATION YARD'S NEEDS

The Argentia site has inherent physical features that appear to make it suitable for some sort of fabrication yard operation. To evaluate such a possibility, several questions must be addressed:

- what kinds of products is the offshore development likely to require?
- what advantages and disadvantages exist for some of these products to be fabricated on the Argentia site?
- if located at Argentia, what are its land use requirements likely to be?

This area was the subject of a separate study. The details are contained in the Appendices and the major findings are highlighted in this chapter.

DESCRIPTION OF OFFSHORE PLATFORMS

The key to fabrication depends on the type of offshore platforms that are put into place and how each of the major components of these platforms are assembled.

(a) Platforms are Becoming More Complex.

Early offshore platforms were first used in the Gulf of Mexico, which has shallow water. These carried a minimum of processing and operating equipment, mostly under open operating conditions. Today, the North Sea - a relatively more hostile climate - carries the producing equipment and accommodation in totally-enclosed units called modules. Recent generations of platform decks and equipment are tending to be more complex, larger in size and heavier in weight.

(b) Five Basic Platform Designs.

There are five different platform designs that affect the type of fabrication and service yards that would be required. These include (a) steel template jacket type, which are steel-framed towers anchored to the seabed by piles; (b) concrete gravity base resting on the seabed; (c) floating, usually of semi-submersible steel design; (d) tension leg, a buoyant platform held towards the seabed by vertical ties and (e) guyed tower, a very tall steel frame held by a spokelike array of guy cables to the seabed. Most construction is of the steel jacket type, which are the most common type in use today. About 20 concrete gravity base structures have been built for the North Sea as well as a few floating production facilities (FPF), but there are no functioning tension leg platforms (TLP) or guyed towers at present.

(c) Concrete Platform Structure Favoured by the Government of Newfoundland.

Based in part on significant social and economic benefits, the concrete platform structure is favoured for offshore development. The apparent advantage of this system appears to be its relative resistance to ice and wave forces by sheer bulk compared with FPF, which must be at times moved out of danger from icebergs.

(d) Three Major Components in Platform Construction.

There are three key components to constructing a platform: the base, the steel platform deck that sits on this base, and the topside modules containing equipment, machinery, accommodations and miscellaneous items, e.g., flare booms, heli-decks, etc.

(e) Different Requirements of Each Component.

An examination of fabrication yards indicates that a yard adjacent to very deep depths of water is required to build concrete gravity bases. Argentia is not a preferred site, as already concluded by the provincial government in its selection of four possible sites in Newfoundland. However, the steel platforms and modules, are of the type of components that could be manufactured in Argentia. A site being considered for concrete structures is Come By Chance, which would tie in nicely to a fabrication yard located in Argentia, and that could also be supported by Marystown Shipyards.

(f) Topside Construction is Common to All Basic Types of Offshore Platforms.

Essentially, from every type of platform studied, the top structure (steel deck, modules or an integrated steel platform) would be fabricated for either a semi-submersible or concrete gravity base.

CONSTRUCTION PROCEDURES
AND CAPABILITY

There appear, based on the above and of relevance in the Hibernia situation, to be three major separate units, each with different building requirements. Briefly, these are:

- base : bottom-founded concrete gravity base or semi-submersible (hulls or pontoons);
- steel platform (deck) structure: welded steel structure (e.g., the "Ninian Central Platform" deck, which weighed about 7,000 tonnes);
- modules : welded steel structures ranging from 10 to 22 modules per platform and weighing within a range of 200 to 2,700 tonnes each; average module size is 15 x 17 x 30 m, housing equipment, storage, utilities, accommodation, etc.

Whether for a semi-submersible or a concrete gravity base, various arrangements of the components can be made. The decision in part can be influenced by government decisions; however, given the fact that there is no experience at the present time, a learning period by fabricating less complex pieces may be a reasonable starting point. The various construction arrangements could include:

- modular topside : the production platform is complete with a deck as part of the hull structure. Modules are then placed on top (small fabrication yard required);
- integrated deck topside : topside facilities are constructed as a total deck structure (deck and modules) complete with equipment installation and hook-up. It is installed on the base as a whole system (large fabrication yard required);
- integral topside : the whole topside structure is built complete with the base (sophisticated fabrication yard required).

In addition to the above, other structures required could include the construction of:

- flare booms;
- heli-decks;
- loading yokes;
- anchor buoys;
- templates;
- mooring systems;
- miscellaneous tanks, ladders, etc.;
- undersea manifold systems (i.e., 15m x 70m weighing up to 2500 tonnes.)

This does not include commissioning and hook-up between the module and deck when they are mated to the base structure. The labour force involved for this is just as large as for the building of all the modules of the production platform.

While various construction methods exist to build platforms, the most common procedure is as follows:

- build a base unit: if concrete gravity system, then the base would be built by a large new yard which would have a graving dock; if a semi-submersible, then the pontoons and uprights would be built within a shipyard either in individual components or as a total assembly;
- once the structure is constructed, it is floated out and submerged in the water with just the top portion above the water;
- generally a steel platform deck is constructed in special yards, placed on barges and floated out over the base where they are mated together;
- modules are then barged out and loaded onto the steel deck, and the hook-ups and commissioning take place;

- if it is an integrated system, the whole structure is barged out and mated to the base structure.

Of course, this precludes building the whole platform as a total integrated system. To do so would concentrate all fabrication activities in one area. This, we believe, would be counter to the government's policies as articulated in the statement on preferred sites (see Exhibit 1).

Need for
New Yards

Of importance here is to recognize that the steel deck platform and modules, or an integrated unit of steel platform and modules, are essentially steel fabricated and, hence, require new types of fabrication yards adjacent to sea access. It should also be noted that no yard presently exists that has the capability to build and handle a steel platform deck or an integrated unit. While some of these could be built in local shipyards, their layout and facilities lend themselves more to the construction of vessels. Land-based fabrication yards, on the other hand, lack access to the sea.

Modules could be handled in a variety of places. Some prospective sites already identified by the provincial government include:

- Argentia;
- Mortier Bay / Marystown Shipyard;
- CN Dockyard (Syncrolift);
- Botwood;
- Corner Brook;
- Bull's Arm.

POTENTIAL DEMAND FOR PRODUCTION PLATFORMS AND THEIR COMPONENTS

A complete analysis of the potential for a fabrication yard in Argentia is beyond the scope of this report, but a general discussion of the relevant order of magritude based on the U.K. North Sea is useful.

In examining the actual oil fields in the U.K. North Sea, there are three developed, each about the same size and reserves as Hibernia. Exhibit 8 below shows the number of production platforms for each field.

EXHIBIT 8

Number of Production Platforms per Field in the U.K. North Sea

Field	Number of Production Platforms
Forties	4 steel
Brent	3 concrete, 1 steel
Ninian	1 concrete, 2 steel

From this information we assume that Hibernia will have three fixed platforms or an equivalent such as one or two platforms with connections to several underwater manifold complexes (U.M.C.). A U.M.C. could weigh 2,000 tonnes or about three times an average module weight.

The average weight of an equipped module is approximately 750 tonnes, but only 500 tonnes on the basis of the structural steel alone. The majority of the modules have been fabricated for the U.K. North Sea weighing less than 900 tonnes, which facilitates skidding and crane lifts.

The number of modules by weight is illustrated in Exhibit 9 below. This worked out to an average of about 900 tonnes per module.

EXHIBIT 9

North Sea Modules Number By Weight Class per Field (tonnes)

Module Weight	500	750	1,000	1,500	2,700	Total 59,000
No. of Modules	24	63	11	7	5	63

We have selected a figure of 58 modules that would likely be required for the three platforms.(1) The average weight of the steel deck for the Ninian Field ranged from 5,000 to 7,000 tonnes and, hence, we selected the lower figure.

(1) This is based on extrapolation between the Ninian Field, which had 38, and a representative North Sea field of 63 modules.

On this basis the amount of steel required for the Hibernia field would be:

58 modules @ 500 tonnes/module	=	29,000 tonnes
3 decks @ 6,000 tonnes/deck	=	18,000 tonnes
total fabricated weight	=	47,000 tonnes
total fabricated weight, including equipment	=	62,000 tonnes.

The proven oil resources, plus reserves at 50% probability, in the U.K. North Sea is generally accepted as being comparable to the situation for all of Newfoundland and Labrador. On this basis, construction for the U.K. North Sea involved approximately 5 to 6 major construction yards (steel platform decks, concrete platforms) and another 10 small fabrication yards (primarily for modules). Module fabrication for the Ninian Central and Ninian South platforms alone was spread among 10 yards. It should be noted that some yards had other activities in addition to module fabrication.

The 62,000 tonnes of steel fabrication and equipment for the estimated 58 Hibernia modules will likely have to be done over a two to three year period. Using 2.5 years as an average, then the annual average would be about 24 modules per year.

A typical yard dedicated solely to module production is estimated to produce about 5,000 tonnes of final module (structural steel and equivalent) per year, which consists of 7 modules per year. Hence, to make the 24 modules over 2.5 years would require 4 small fabrication yards.

In addition, there are other fabrication requirements, e.g., tanker loading, yokes, crane booms, heli-decks, etc., which can be considered equivalent to another module-size fabrication yard.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 11

ILLUSTRATION OF TYPICAL LARGE FABRICATION YARDS - CHARACTERISTICS

ITEM	LARGE FABRICATION YARDS				
Yard	Highland Fabricators Nigg, Scotland	Aker Trøndelag A/S (1) Norway	Howard/David Yard (2) Kishorn, Scotland	Lundrigan Tri Ocean/ Foster Wheeler Ltd. Study	Argentia Offshore Contractors Ltd. Proposal (Phase III)
Annual Capacity	11,200 tonnes/yr.	15,000 tonnes/yr.	N/A	5,000 tonnes/yr.	10,000 tonnes/yr.
Employment	1,800	N/A	N/A	N/A	650
Major Products	-steel platforms - module decks	-semi-submersible	-integrated deck yard	-integrated steel deck	-semi-submersible -vessels -steel platform decks
Gross Area	65 ha	44 ha	9 ha	6 ha	22.6 ha
Quay					
-frontage	300 m.	N/A	N/A	90 m.	N/A
-draft	N/A	N/A	N/A	5.5 m.	N/A
-other	-3 skidways -graving dock	-skid load out - 2 parallel dry docks	N/A N/A	-dry dock -dredging required to 5 and 12 m.	-in-filling request (3) for dock (incoming supplies)
Misc.					
-graving	-training school -420-man accommodation hostel	N/A	N/A	-airport services -airport services	-airport services -airport services

(1) Built the Aker range of semi-submersible twin-pontoon drill rigs.

(2) Produced the integrated deck "Hideck" meaning 75 x 85 m and weighing 18,000 tonnes.

(3) Reclaimed land from the sea approximately 1.2 ha (3 acres).

N/A - not available.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 10

ILLUSTRATION OF TYPICAL SMALL FABRICATION YARD - CHARACTERISTICS

ITEM	SMALL FABRICATION YARDS					
Yard	Batservice Verft A/S, Norway	Eydehaven Industrier A/S, Norway	Brown & Root (U.K.) Ltd. Yarmouth	Lundrigan Tri Ocean Ltd./ Foster Wheeler Ltd. Study (1)	Argentia Offshore Contractors Ltd. Proposal (2) (Phase I)	(Phase II)
Annual Capacity	2,500/yr.	N/A	N/A	5,000 tonnes/yr.	500 tonnes/ yr.	2400 tonnes/ yr.
Employment	300	N/A	N/A	400 (200 sub-trades)	200	400
Major Products	-accommodation modules -vessels	-modules -flare booms -trenching plows	-modules up to 2,700 tonnes	-modules	-general fabrication	-accommodation modules
Gross Area	3.6 ha	5.6 ha	21. ha	6.0 ha	22.6 (all phases)	22.6 (all phases)
Quay						
-frontage	400 ft.		336 M			
-draft	13 ft.		N/A			
-other		Skid Load Out		Skid Load Out (dredging required to 4 m.)	barge operation	in-filling required for deep dock

(1) Study conducted by Lundrigan Tri Ocean Limited/Foster Wheeler Limited on Argentia Site as a module fabricator.

(2) Proposal submitted to the Department of Development.

Also, for making the estimated three platform decks (weight about 6,000 tonnes per deck) it is probable that 2 to 3 additional large-size (6,000 to 12,000 tonnes capacity) fabrication yards would be required.

Again, it should be noted that a large-sized yard is a sophisticated and complex undertaking. It would take considerable time to evolve, requiring a great deal of experience and knowledge of this type of construction. This should, therefore, be considered in a longer-term timeframe.

BASIC FABRICATION YARD REQUIREMENTS

For illustrative purposes, the typical characteristics of small fabrication yards are compared with those of large fabrication yards in Exhibits 10 and 11 opposite. Typical yard layouts are also shown in the Appendices, as well as:

- study for a fabrication yard (small and large) carried out for the Department of Development by Lundrigan Tri Ocean Limited/ Foster Wheeler Limited;
- proposal for a small yard (Phase I and II) increasing to a large fabrication yard (Phase III) by Argentia Offshore Contractors Limited (A.O.C.).

Since little is available in the way of site requirements, reliance was placed on the replies received in response to our questions submitted to A.O.C. These have been used essentially as guidelines for determining scale of infrastructure requirements. Specific requirements assumed are based on the experiences in the U.K. North Sea. It should be noted, however, that individual developers locating in the Argentia site may have requirements that would differ.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 12

TYPICAL REQUIREMENTS FOR THREE SIZES OF FABRICATION YARDS

ITEM	General Fabrication	Accommodation Module	Steel Deck Platform/All Module Type	UNITS
1. Water				
1.1 Fire Protection at minimum duration of 7 hours	6,700	6,700	6,700	U.S. Gals/m.
1.2 Domestic	3,000	7,500	15,000	U.S. Gals/day
2. Wastes				
2.1 Domestic & Industrial Sites	300	750	1,500	tons/year
2.2 Scrap Metal	140	350	700	tons/year
2.3 Liquid	6,000	15,000	30,000	U.S. Gals/day
3. Storm	---storm drainage system requirements specific to each site----			
4. Utilities				
4.1 Electricity	2	4	8	megawatts
4.2 Telephone	100	200	400	pairs of lines
5. Transportation				
5.1 Trucks				
- quantity	5,000	5,000	2,000	tonnes/year
- loads	5	5	2	loads/week
5.2 Sea (1)	nil	5,000	15,000	tonnes/year
5.3 Air	50	300	500	No. return flights/year
5.4 Rail	1,000	3,000	3,000	tonnes/year

(1) Most incoming supplies and shipments would eventually be made by sea. This could be handled by the fleet dock or by a proposed new dock at the Seaplane base.

Highlights of the requirements affecting infrastructure and municipal services are presented in Exhibit 12 opposite.

CONCLUSIONS

1. There appears to be a demand, based on the Hibernia field alone, for about 5 small fabrication yards and 2 to 3 larger yards. This demand could be understated in the context of the whole Atlantic east coast development.(2)

2. For major steel fabrication the U.K. experience has been to construct new fabrication yards specifically designed to handle large offshore production structures. Examples are Nigg (steel fabrication), Ardesier (steel fabrication) and Kishorn (concrete and steel). A similar rationale could apply to module construction yards. Module construction is more akin to structural steel in buildings rather than curved steel plates of shipbuilding, so in many respects the construction process is different.

3. For a small yard capable of producing modules, the requirements are:

- fabrication site area	:	(6.0 ha)
- sheltered waterfront		-
- draft for barges	:	(4 m)
- berthage (barges)	:	(100 m)
- draft for incoming supplies	:	(10m)
- level land site		
- adequate services.		

4. Given the Argentia site, the natural location that meets the above requirements would be the old seaplane area and the area just north of it.

(2) Scotian Shelf Gas Development: The Economic Impact in Nova Scotia, Eastern Offshore News, July 1982.

5. Provision should be made to accommodate a larger fabrication yard in the future. A large yard such as Nigg is unlikely to be built for the short term unless an international firm who is already in the business is interested in establishing such a yard, as happened in Scotland. The amount of land that should be set aside should be about 22 ha.

6. It is assumed that approximately an average of one field will be brought on stream every three to four years. On this basis continuity will be established for the fabrication yard over the longer-term period.

In conclusion, assuming that Hibernia development will go ahead, there appears to be a reasonable expectation for reserving land for a fabrication yard. On the basis of the fabrication yard requirements and characteristics, the Argentia site area (old seaplane base and area to the north of it) could accommodate either one or more fabrication yards. This appears to be supported by the Lundrigan Tri Ocean/Porter Wheeler report, as well as the proposal request by Argentia Offshore Contractors Limited.

It is therefore recommended that the above described area be set aside for a heavy industrial park area.

VII - ASSESSMENT OF AN OFFSHORE SUPPLY BASE

A similar set of questions that applied to assessing the need for a fabrication yard can be equally applied to determining the prospects for a supply base. Given the level of exploration forecasted, some indication of the need for such a base, its requirements and the attractiveness of the Argentia site has been undertaken in this chapter. The detailed report is contained in the Appendices.

DESCRIPTION OF SUPPLY BASE FUNCTIONS

A supply base is sometimes referred to as an offshore service base which is built specifically to service the offshore industry. They can be simple or sophisticated, depending of course on the demands made on the port. Automated feed lines for water, fuel and consumable supplies are typical examples of a sophisticated base. These are necessary in order to achieve a rapid vessel turnaround time.

The typical types of vessels that are the end-users of such bases could include:

- supply vessels servicing the offshore rigs;
- seismic/diving support/rescue vessels;
- drill ships;
- cargo vessels.

By far the major users are the supply vessels who are the major links between the offshore rigs and the stores of supply onshore. As such the supply base needs to have sufficient capacity to handle activities of peak demand at any time or under any weather conditions.

Supply Vessel Characteristics

Supply vessels are specially designed, generally having a carrying capacity of 1,400 tonnes and a clear deck area of approximately 45 x 15 metres. They also have tanks and chambers for transporting barite, cement, potable water, drill water and fuel. Typical supply vessel activities include:

- carrying food, supplies, etc., to the offshore rigs;
- towing semi-submersible rigs and barges;
- iceberg towing;
- anchor handling for barges and rigs;
- rig surveillance, standby at rig, and act as a rescue vessel at accidents and disasters;
- surveillance and ice spotting;
- oil spill recovery and clean-up;
- fire fighting;
- ice breaking.

Most supply vessels can be docked in a sheltered harbour with a dockside draught of 5.5 m at normal low tide with a berth of 70 m. However, the trend, particularly in northern offshore development areas, is towards larger vessels which can operate in almost any kind of rough weather and ice-infested conditions. A berth allowance, including springlines, averaging 76 m (250 ft.) per supply vessel appears appropriate for our present planning purposes.

A single drill rig working the Grand Banks area usually has three such supply vessels: one on standby/reconnaissance at the rig, one steaming with supplies, and one in port. To support three semi-submersible drill rigs on the Grand Banks has required six vessels: three on standby/reconnaissance, three on supply, plus an extra vessel for surveillance during January to June (potential iceberg season) and to allow for more difficult wintertime operating conditions.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 13

TOTAL BULK AND CARGO TRAFFIC FOR THE PORT OF ARGENTIA - 1980 (tonnes)

Type	Inbound (Domestic)	Inbound (Foreign)	Total
Liquid Bulk	16,700	NIL	16,700
Dry Bulk	5,400	NIL	5,400
General Cargo	800	NIL	800
Total	22,900	NIL	22,900

Type	Outward Bound (Domestic)	Outward Bound (Foreign, 1979)	Total
Liquid Bulk	300	NIL	300
Dry Bulk	300	NIL	300
General Cargo	3,500	2,200	5,700
Total	4,100	2,200	6,300
GRAND TOTAL	27,000	2,200	29,200

SOURCE: Ministry of Transport.

Finally, given the functions performed by these supply vessels, dedicated dock space is often a prerequisite for any site area consideration.

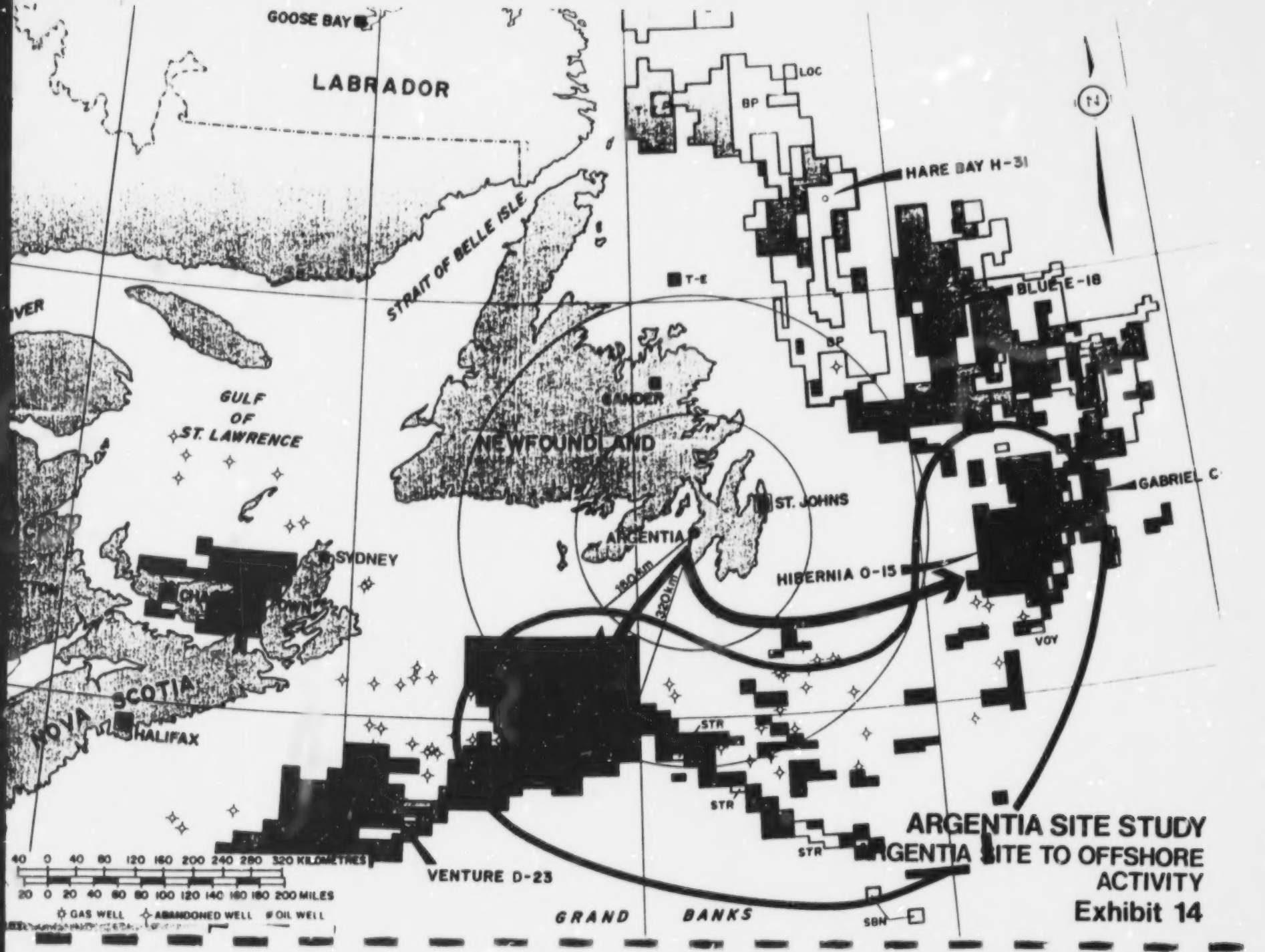
Present Site
Functions in Argentia

To date, Argentia has fulfilled to a minor extent some offshore related functions. For example, a drill ship awaiting an offshore assignment in 1982 has tied up at the fleet dock for minor servicing work. Also, raw barite has been landed and stored in sheds on the Sterling Limited lease at the north end of the fleet dock. The function was that of warehousing for a local mud company, rather than a supply base function.

Other major users of the fleet dock include the Canadian Navy fuel supply vessels which pump fuel into two large fuel storage tanks located on the MOT (Coast Guard) site. This fuel supplies other navy vessels as required. The level of activity for this is relatively infrequent.

Again, some inbound domestic traffic in the form of dry bulk (primarily salt, barite) and some general cargo is occurring. Outward bound traffic is generally fairly light (primarily frozen fish products). Exhibit 13 opposite provides some order of tonnages.

Another operation using its own dock (Ro-Ro Wharf) is the CN Marine operation. Its prime function is the ferrying of passengers and related vehicles between Sydney, Nova Scotia, and Argentia during the summer months.



ARGENTIA SITE STUDY
ARGENTIA SITE TO OFFSHORE ACTIVITY
Exhibit 14

FORECAST OF REQUIRED SUPPLY BASES

Logically, the potential market for a supply base for Argentia would hinge on its close proximity to the offshore activities. Exhibit 14 opposite shows where this potential area is located. Essentially, a reasonable assumption is that the supply base market for Argentia lies in the Grand Banks area. As such, it is in direct competition with the Port of St. John's.

Exploration and Appraisal

Using as a peak the drilling forecast outlined in Chapter V, a requirement for supply vessels can be calculated for the Grand Banks, and is shown in Exhibit 15 below.

EXHIBIT 15

Projected Peak Year Exploratory and Appraisal Drilling (1980 to 1990)

Item	Grand Banks		All Newfoundland & Labrador	
	Low	High	Low	High
Exploratory wells/year[1]	9	19	19	39
Appraisal wells/year	5	10	9	20
Total Wells[2]	14	29	28	59
Rig years[3]	4	8.3	8.0	16.8
Avg. Operating Period per Rig per Month	10	10	3 to 10	3 to 10
Peak drill rigs[4]	4.8	10	16.5	33.1
Supply Vessel docks (Grand Banks)[5]	2*	5*	7*	13*

(*) figures rounded.

(1) Petroleum Directorate. (2) Appraisal wells (Approx. 50% x exploratory wells). (3) Rig-years (total wells ÷ 3.5). (4) Peak drill rigs (rig-years x 12 ÷ operating period in months). (5) Docks (peak drill rigs ÷ 2).

The foregoing calculation is based on the Port of St. John's statistics, which indicate that 1.5 to 2.0 drill rigs can be supported per supply vessel dock. Data from Aberdeen support the planning ratio of 2.3 drill rigs per dock. We have used a ratio of 2, and on this basis a range of 7 to 13 supply base docks would be required.

Field Development

An estimate of supply dock requirements for field development is somewhat less certain. There really is no standard because geological conditions vary from area to area. In the Newfoundland offshore, development well drilling is likely to take place before and after the production platform is installed. This could take place for 4 to 5 years, or even more, for very large fields.

Based on the U.K. North Sea situation, we estimate that there would be about 4 drilling rigs involved over a 5-year period. Hence, supporting the development of the Hibernia field could require, say, four supply base docks consisting of:

- 2 docks for supporting 4 drill rigs;
- 1 dock for supporting platform completion work, hook-up, commissioning and subsea work;
- 1 dock for servicing purposes for supply vessels, diving support vessels, etc.

It is interesting to note that the accelerated development of the East Shetlands Basin in 1977 and their planning ratio translated into 12 docks for exploratory and appraisal drilling, and another 12 docks for field development. The East Shetland Basin is considered to be about equivalent to the Hibernia Field.

Overall Provincial Demand

Summarizing the above, an estimate of the number of supply docks

Owner Operator	Pier No.	Dock Length m	Wharf Ha.	Principal Functions
Other:				
Pilot Station	-	23	0.20	Pilot Boat Dock Harbour Cruise Boat Dock Parking Lot.
Small Boat Basin	-	30	0.30	Small Boats Winter storage of boats. Misc. Buildings
Newfoundland Dockyard and Canadian National	33, 34, 35 36, 37	526	0	Moorings
For future synchrolift	32	Nil	1.11	
		4,500	20.94	

Summary	Berth Length m	Wharf Area Ha.
Owned and operated by NHB	900	1.51
Owned by NHB and leased	1,322	7.40
Private firms	1,219	7.78
Government	480	2.55
Other	579	0.59
for synchrolift	Nil	1.11
	4,500	20.94

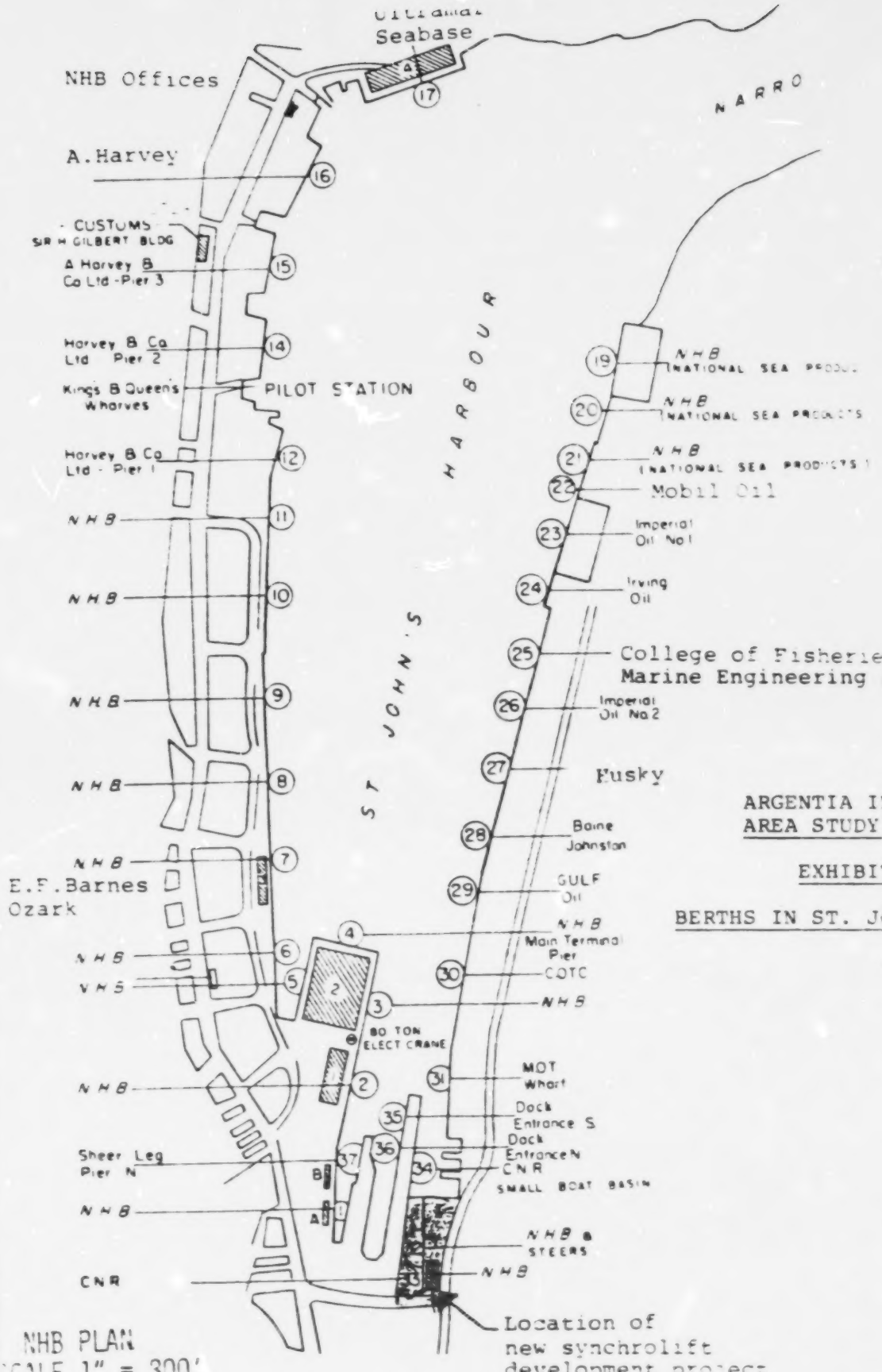
Source: National Harbours Board.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 18

SUMMARY OF MAJOR DOCKS AND UPLAND AREAS
ST. JOHN'S HARBOUR

Pier Operator	Pier No.	Dock Length m	Wharf Ha.	Principal Functions
Owned and operated by NHB	6	159	0.14	longliners
	7,8,9,10,11.	741	1.37	general purpose
Owned by NHB and leased:				
Canadian National	1	175	0	longliners
Nfld. - Mainland Shipping Firms	2,3,4,5	627	5.46	containers, sideloader, Ro-Ro
National Sea Products	19, 20, 21	335	0.96	trawler dock and parking lot
Ultramar	17E	45 +	0.21	tankers, bunkering
CN Marine	17W	140	0.77	Labrador coastal vessels
Maggotty Cove Land fill			0.4	
Owned and operated by:				
Harvey Group	12,14,15,16	518	4.64	(containers (supply base
Mobile Oil Limited	22	152	0.43	supply base
Imperial Oil Limited	23	145	0.70	fuel dock
Irving Oil Limited	24	69	0.43	fuel dock
Gulf Oil Limited	28, 29	183	0.95	fuel dock
Husky Oil	27	152	0.63	supply base
Owned and Operated by: D.N.D.	26	61	0.23	
Transport Canada	31	183	1.31	Coast Guard
Provincial Government (Fisheries College)	25	137	0.55	training



NHB PLAN
SCALE 1" = 300'

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 17

BERTHS IN ST. JOHN'S HARBOUR

Source: National Harbours Board.

required under different development scenarios is shown in Exhibit 16 below.

EXHIBIT 16

Supply Vessels Docks Required Based On Various Development Scenarios (1981 - 1990)

Scenario	Exploratory and Appraisal Wells Docks	Field Development Docks	Total Docks
1. Present level	6	-	6
2. Province's low	7	Hibernia 4	11
3. Province's high	13	" 4	17
4. Province's low	7	East Shetland's equivalent 12	19
5. Province's high	13	" 12	25

The key question now becomes one of assessing the present capacity of the Port of St. John's. An answer to this question would indicate if any spill-over of needs is likely.

SUPPLY BASE ACTIVITY IN ST. JOHN'S

Unfortunately, the results of a current study of the Port of St. John's were not available for this study. However, we have been able to approximate capacity levels for the Port of St. John's, as detailed in the following sections.

Exhibits 17 and 18 opposite show a plan layout of the St. John's Harbour, including ownership of each berth, its dock length, adjacent land area and its principal function. The total accessable wharfage is about 4,500 metres, supported with 21 hectares of land.

In 1979, a peak year for supply vessel activity, six of the eight drilling rigs listed for Newfoundland waters were supported out of St. John's through Harveys Piers 12 and 14 (Esso Resources Canada Limited, one rig; Aquitaine Company of Canada Limited, 1 rig; Total Eastcan Exploration Limited, 3 rigs; Texaco Canada Limited, 1 rig). Harveys reported nineteen supply vessels using their facilities in 1979, although Aquitaine's requirement was fairly infrequent because the drill ship "Ben Ocean Lancer" was in the Davis Strait, an eleven-day or more round trip. Three drill ships were mobilized in 1979 from the Harvey property, and their wharfage was also used for the final assembly of two Ocean Data Station Buoys used in the Labrador Sea. In addition, Chevron Standard Limited, drilling Hibernia 0-15, operated supply vessels from Pier 22.

Summarizing the above data, it would appear that close to 600 metres of dock space, representing close to 8 berths (70-metre berths), was accounted for by offshore supply vessels (see Exhibit 19 below).

EXHIBIT 19

St. John's Harbour: Docks for Offshore Supply Vessels since 1980

Ownership	Location	Length of Dock	Berths	Actively used as Supply Base
		(metres)	(No.)	
Harvey & Company Limited	Pier 12	130	2	Yes
	Pier 14	155	2	Yes
Mobil Oil Canada Ltd.	Pier 22	152	2	Yes
Husky Oil	Pier 27	152	2	No
Total		589	8	

It was noted that Harvey's Piers 15 and 16 can occasionally supply a berth.

Potential for Additional Berths

In general, the docks do not have much back-up wharf area. The exceptions are (1) the NHB finger pier area (Piers 2, 3, 4 & 5), which has adjacent wharfage and freight sheds; (2) the A.H. Harvey and Company area (Piers 12, 14, 15 and 16), which has 4.64 ha of adjacent wharfage and buildings; (3) Pier 17 West, with the adjacent Maggoty Cove landfill, has a total area of about 1.2 hectares. Hence, like Aberdeen, the supply base in St. John's are required to have back-up lands in the hinterland several miles from the harbour.

The NHB finger pier area has been a principal general cargo receiving area in the port. The Harvey's wharfage has served mainly supply vessels, container ships. Pier 17 W serves as a container port, a dock for CN traditional cargo vessels and for commissioning drill ships.

The finger pier area was designed for a break-bulk general cargo operation. This traffic has declined during the last few years, to be replaced by containerized freight. Future plans for the NHB finger pier area are not yet definite, but they could include pulling down Shed #2, the large freight shed, and opening up this area as a container port. Ro-Ro traffic (trailer vans and new autos) are handled at the Finger Pier (Pier 5) and these activities would be compatible with open space and container traffic. Under these circumstances, the Harvey's container stevedoring operation would move from Pier 15 to the Finger Pier area.

Assuming that Harvey's Pier 16 (145 m) would be improved and kept for general cargo or drill ships, then the remaining 373 m (six berths) and about 3.5 ha of wharfage could fulfill the role of a major supply base. The area already has water and fuel lines to some of the docks.

Also, additional supply base docks could be made on the south side of the harbour, although this area is now less desirable because of the more difficult road access. The following options could be considered, which include additional dock space which is barely utilized at present:

(a) Piers 25, 26 & 27

Pier 26 DND property (formerly leased to Imperial Oil), plus Pier 25, which could be cleared of buildings, together with Pier 27, already a supply base with two berths (Husky) would provide a total of 350 metres of dock length. This combined dockage would be sufficient for five supply vessel docks. The buildings on Pier 25 are used by the Provincial Fisheries College for instruction purposes. Their needs would require to be accommodated elsewhere. Also, Pier 25 is reported to have a limiting depth of 4.9 metres (16 feet) at one point. This is shallow for large supply vessels and, if necessary, this problem would have to be overcome.

(b) Piers 20, 21 and 22

Another possibility would be to develop Pier 21 and part of Pier 20 into a 152 metre two-berth supply base. This would be adjacent to the present Mobil supply base, Pier 22. Piers 21 and 20 are owned by NHB and leased to National Sea Products. To compensate for this loss of wharfage, a new dock could be built east of the National Sea Fish Plant. Such an extension may well suit the requirements of National Sea better than the present arrangement (since they have requested such an extension). Arrangements would need to be made regarding the National Sea building on Pier 21. Also the wharf deck and dock face are reported to need improvement.

In addition there is sufficient space to build a new deep-water dock east of Pier 17E. Such a dock could act as an offshore supply base for supply and seismic vessels and drill-ships, and thus is an additional possibility.

Therefore, possible future supply vessel berths in St. John's could be:

Area	Additional Supply Berths Possible
Harvey's Piers 12 to 16	2
Piers 25, 26 & 27	3
Piers 20, 21 & 22	2
Total	7

Other offshore-related vessels (seismic, diving support and ship-shaped drill-ships) could make use of berthing elsewhere in the harbour. (The harbour entrance is too constricted for semi-submersible drill-ships.) A larger variety of ship-shape drill-ships for Newfoundland - Labrador waters is the "Pacnorse", 149.4 m length, 23.5 m beam, and 8.0 m full-loaded draught. Drill-ships have usually been docked at Piers 17, 11, 10 and 3, which have the deeper berthing depths.

Summary

In summarizing the above, it would appear that at present there are 8 berths dedicated to servicing the offshore industry, with the potential of another 7 more berths that could be added under certain conditions and arrangements. The total potential, on a conservative basis, could be 15 berths.

ST. JOHN'S HARBOUR
CAPACITY

Will existing activities impinge on future growth of supply bases? One good indication is to examine the capacity of the existing harbour.

The records of the Harbour Master and the St. John's Coast Guard VTM Centre were examined and analyzed for the month of July 1979, which was a very active month in the history of the port. The records were used to determine the vessel-hours of mooring at each pier in the harbour, in order to estimate the spare capacity of the dockage to accommodate possible overflow from the supply base, and is shown in the Exhibit 20 below.

EXHIBIT 20

Utilization of Berthing, July 1979, St. John's Harbour

Vessel Type		Vessel Days in Port(1) Days	Percent
Government		184	27.9
Offshore-related Vessels:			
- supply vessels	144		
- drill-ships	15		
- seismic	3	162	24.6
Cargo vessels		119	18.1
Foreign trawlers and support vessels		118	17.9
Canadian trawlers, others		76	11.5
TOTAL		659	100.0

(1) Excludes the dry dock and also vessels under 19.8 m in length.

Offshore oil and gas exploration had a significant impact on harbour activities in July 1979, as shown above. Vessels recorded in that month include supply vessels, drill ships and seismic vessels. The supply vessels constituted the bulk of the total

offshore vessel wharf utilization time, amounting to 144 vessel days in port in July 1979.

Each berth fully utilized can supply 30 or 31 vessel-days per month without double berthing. This could be achieved with a single vessel more or less permanently tied up and, in fact, appeared to be the case in a few instances in July 1979. A practical capacity for vessels coming and going is perhaps 30 vessel-days per month per berth. Our analysis indicates that Piers 1 and 6, representing four berths, appear under-utilized but, in fact, they were occupied with small craft. They are not recorded in the harbour records because they are exempt from harbour dues and Vessel Traffic Management (VTM) control.

Deducting these four berths gives a total of 65 - 4 = 61 nominal berths (each of 60 m to 70 m) in the complete harbour. Applying the 30 vessel-days per month per berth criterion to the 61 berths provides a total harbour capacity of 61 x 30 = 1,830 vessel-days per month. Hence, the total of July, 1979, of 658.3 vessel-days represents a utilization rate of 658.3 ÷ 1,830 = 36%

Hence there appears to be considerable space capacity in the harbour. It should be noted that this is a rough approximation. To do a proper study, berth utilization and wharfage should be studied by function. For example, the fuel docks, although they appear under-utilized, are dedicated to fuel delivery and supply.

Conclusion

In conclusion, St. John's Harbour has under-utilized space which could be developed to provide three supply base centres, with a total berthage for 15 supply vessels. There is likely to be sufficient space elsewhere in the harbour to accommodate occasional berthing if required for seismic vessels, drill ships, supply vessels waiting for commission, and divin support vessels.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 21

ESTIMATE OF NEW SUPPLY BASES REQUIRED OUTSIDE ST.JOHN'S

SCENARIO	EXPLORATORY & APPRAISAL WELLS (No.)	(1) MAJOR FIELD DEVELOPMENT (No.)	No. of SUPPLY BERTHS REQUIRED (2)	EXTRA BERTHS EXISTING CAPACITY 8 BERTHS (3) (No.)	EXTRA BERTHS EXPANDED CAPACITY 15 BERTHS (No.)	OUTSIDE SUPPLY BASES (EXISTING CAPACITY) (No.)	OUTSIDE SUPPLY BASES (EXPANDED CAPACITY) (No.)
1. Current Level	Existing	-	6	0	0	0	0
2. Low + Hibernia	28	1	11	3	0	1	0
3. High + Hibernia	59	1	17	9	2	1 to 2	1
4. Low + East Shetland Equivalent	28	6	19	11	4	1 to 2	1
5. High + East Shetland Equivalent	59	6	25	17	10	2 to 3	1 to 2

(1) Exhibit 14.

(2) Exhibit 15.

(3) To illustrate:

8 existing berths
less berths required =
new berth requirements.

The problem [illegible]ohn's may well be the acquisition or co-ordinatic [illegible]he various land ownerships required to build suitable [illegible]s and the provision of road improvements to the harbour.

NEED FOR ADDITIONAL SUPPLY BASES

Comparing the total number of berths required in relation to the existing and expanded capacity is shown in Exhibit 21 opposite. What becomes apparent is the future decision to be made by Port Authorities regarding St. John's harbour.

If the present capacity is retained (6 supply berths), then additional supply bases are not likely to be required in the St. John's area until Hibernia comes on stream, based on the low scenario. If one accepts the higher scenario, then it is likely that 1 to 2 supply bases may be required.

On the other hand, if the potential of St. John's harbour is expanded to 15 supply berths, no extra supply bases are required. If Hibernia comes on stream, then it could be possible that a minor supply base would be required.

Of interest to note is that if development is stepped up to the level that existed in the East Shetland Islands, then 1 to 3 major supply bases would be required.

Argentia is faced with the prospect of competing with four other sites in addition to St. John's. For example, Botwood is presently being used to a small extent as a minor supply base.

It is likely that, given the extra capacity at St. John's and the capability to expand into extra supply berths, one supply base, with 2 to 5 berths, may be required. Therefore, for planning purposes, provisions are made to accommodate one supply base.

The following factors will likely influence the size and location of a supply base beyond St. John's:

- more than one oil field being developed at the same time, or hooking-up two large platforms simultaneously in the same field;

- it is found to be too difficult or expensive to provide additional supply bases in St. John's harbour;

- Hibernia development is not carried out with supply bases in St. John's because a less congested "green field" site is preferred;

- proximity considerations from supply base to the fields, e.g., Argentia is more favourably located in relation to serving the southern Grand Banks than serving the offshore areas of northeast Newfoundland and Labrador.

BASIC SUPPLY BASE REQUIREMENTS AND PLANNING GUIDELINES

For planning purposes we have examined several supply base requirements in the U.K. North Sea. Also, much of the planning data presented here has been drawn from The "Factbook" (New England River Basins Commission).

The proposed planning guidelines for a supply base cover support for:

- exploratory (appraisal drilling operations);
- development drilling/completion of hook-ups and commissioning for a large offshore platform in a large field being developed by 4 drilling rigs working simultaneously;
- production phase of an offshore platform.

These are summarized in terms of likely requirements in the following Exhibit 22 below.

EXHIBIT 22

Estimated Requirements for a Typical Supply Base

Item	Units	Exploratory & Appraisal Drilling	Field Development (1 platform)	One Platform in Production	Total (4)
Assessed No. of Drilling Rigs	No	2	4	-	6
Supply Vessel Berths	No. (1)	1	4	1	6
Supply Vessels	No.	5 (2)	10	3	18
Ware-houses	m^2	1,800	8,000	9,000	18,800
Offices	m^2	250	800	150	1,200
Open Storage	ha	1.2	8.0	6.0	15.2
Total Gross Land Area	ha (3)	2.0	12.0	9.0	23.0

(1) Assumes supply/surveillance/standby function remains the same as at present.

(2) Two rigs in proximity by the same operating company.

(3) Includes buffer zone, access roads, etc.

(4) Platform operating only; not allowing for workover or development drilling requirements.

In addition, additional berthing is required for seismic and diving support vessels at a rate of 1 berth for every 5 supply vessel docks.

Given 6 berths at, say, 76 metres would mean a dedicated dock space of 456 metres. In addition, exclusive use of land from dock face of dedicated docks back should be about 2 hectares. The fleet wharf contains about 814 metres, hence a little over half could be used for a supply base (this is providing, of course, that the fleet dock would be renovated to acceptable standards).

Regional Tubular Storage Yard

Another possibility for Argentia could be a large pipe storage yard servicing the whole offshore Atlantic region. The facility would require space for the testing and inspection functions, including:

- off-load pipe and place in outside storage;
- transfer pipe to weather-tight building for inspection;
- inspect, grade pipe, and colour mark pipe;
- sandblast, clean and coat pipe;
- transfer back to outside storage;
- load for shipment to oil company yard or to offshore work site.

The total land required would be not less than 15 hectares.

Prospective Supply Base Proposal

A recent proposal has been received by the Department of Development from Argentia Development Corporation (ADC). A preliminary review of their requirements appear to reflect a

Item	Quantity	Units
6. Cranage		
- main dock	70/80	tonnes
- T-crane on heavy-lift dock	200/250	tonnes
- T-ro-ro on heavy-lift dock	500/600	tonnes
7. Vessel Arrivals		
- vessels (year 3)	170	no.
- vessels (year 6)	470	no.
- max. draft		
* supply	6	metres
* large cargo	9	"
* tankers	8	"

SOURCE: A.D.C. questionnaire.

(1) Once stocks are established, the number of journeys will fall dramatically. It is more likely that most bulk and supplies would be delivered by vessel after the first year.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 23

POSSIBLE UPPER PLANNING CRITERIA FOR A SUPPLY BASE

Item	Quantity	Units
1. Water		
1.1 Fire Protection at Minimum Duration of 7 hours	6,700	U.S. gpm.
1.2 Domestic	nominal, included in 1.3	
1.3 Bunkering		
- vessels	600,000	U.S. gpd.
- peak	100,000	U.S. gph.
2. Wastes		
2.1 Solids		
- min. (1st 3 yrs.)	2,000	tons/year
- max. (year 6)	3,600	tons/year
2.2 Liquids (mainly sanitary sewage)		
- year 6	18,000	U.S. gpd.
3. Storm - - storm drainage requirements specific to each site - - -		
4. Utilities		
4.1 Electricity		
- year 3	2	MW
- year 6	4	MW
4.2 Telephone		
- year 3	200	pairs
- year 6	600	pairs

5. Transportation[1]	Tons/rig/week	Truckloads/ rig/week	Journeys/rig per week
- mud	49	3	6
- cement	24	2	4
- food	10	1	2
- tools & misc.	10	1	2

higher development scenario than that outlined by The Petroleum Directorate. Based upon their request, it appears that the size of offshore development would be more akin to the U.K. North Sea (e.g., East Shetlands Basin). If this is the case, then it would represent the accelerated scenario as outlined (see Exhibit 16, Scenarios 4 and 5). The provincia' government officials will have to assess the merits of this proposal in more detail. Of particular attention is to what extent should the supply base reflect the possibility of an unusual peak condition.

BASIC SUPPLY BASE INFRASTRUCTURE REQUIREMENTS

Available information on the infrastructure requirements has been based on a questionnaire posed to the Argentia Development Corporation. As such, it reflects the equivalent of an accelerated development activity. Some of their requirements, as outlined in their proposal, include:

- use of all of the fleet dock, which could represent the equivalent of 11 berths on a non-dedicated basis, or 9 berths on a dedicated basis;
- land area requirement of 57 hectares;
- total work force by year 6 of 300;
- base design to serve 10 rigs, 2 development platforms and 1 production platform by year 6.

Alternatively, it could represent a peak situation of a short period of time. Data for planning purposes are shown in Exhibit 23 opposite.

ARGENTIA INDUSTRIAL SUPPLY AREA

EXHIBIT 24

SUPPORT AREAS FOR OFFSHORE DRILLING

Item	Exploratory and Appraisal Drilling Quantity/Rig	Development Drilling Norscott Case (1)	Development Drilling ASCO base (2)	Development Drilling ADC Proposal	Units
Berths	N/A	9	3	9	berths
Quay Space	N/A	N/A	1.4	N/A	ha
Warehousing	N/A	17,000	9,000	(3)	m^2
Offices	N/A	1,600	600	(3)	m^2
User storage	0.8	10	11.3	N/A	ha
Total Gross Area	1	17	14.3	57	ha

(1) Responds to a level of activity equal to the East Shetland Islands development

(2) ASCO bases in Peterhead, Scotland. Represents servicing 2 development rigs and 2 mobile rigs.

(3) AOC's proposal is based on renoving and utilizing existing buildings on site.

Whatever this represents in terms of a supply base requirement, for planning purposes it provides an upper limit. Obviously, this would have to be examined in more detail as offshore developments become clearer.

The size of the supply base, which the above represents, would be 57 hectares. A comparison of some typical supply bases is shown in Exhibit 24 opposite.

CONCLUSIONS

Based on which development overview is adopted and any decision made to enlarge the capacity of St. John's Harbour could mean either one (low scenario plus Hibernia) to three (higher scenario plus Hibernia) supply bases appear to be possible. A preliminary analysis of data indicates that the need for another major supply base is likely to be a long-term proposition. This is arrived at from the following findings:

1. St. John's Harbour appears to have ample capacity. St. John's is an ideal supply base since it is a central warehouse for all goods and services located in one area. At present it provides 8 berths dedicated to catering to supply vessels and other offshore development activities, i.e., seismic vessels. A possibility exists to increase this by another 7 berths, with some capital investments and adjustments, making a total of 15 berths.

2. Low and High Scenarios. With the examination of the Port of St. John's and using the high scenario (high exploration and the development of Hibernia), then one additional supply base would likely be required. If St. John's does not provide excess capacity under the high scenario, two supply bases would be required.

It is unlikely that under the low scenario (low exploratory drilling and the development of the Hibernia field) any additional supply bases would be required.

We have therefore assumed that one supply base could be required, and that provisions be made in Argentia to accommodate this requirement for planning purposes. This is not to say that it would be located there, since it would have to compete with five other possible sites.

3. A Supply Base would Require Half the Fleet Dock.

To establish a major supply base in Argentia would require about 6 dedicated docks totalling 450 metres of dock face. If this requirement were located on the fleet dock it would occupy about half of the overall dock, which has a total length of 814 metres (2,671 feet). Thus there would likely be enough space remaining at the fleet dock to handle other traffic even if half of the space were taken up by a supply base.

4. Some Conflict in Dock Dedication Likely.

The problem of obtaining a dedicated dock could be difficult when U.S. and Canadian priority berthing rights as well as the "public" designation of the dock are taken into consideration. A dedicated dock would conflict with the "first come, first serve" public nature of the dockage and it would likely require a special federal decision to provide any dedicated docks to a private firm. Under present circumstances MOT may not be able to provide for dedicated dock space under their existing mandate.

5. Clarification Required on Existing Proposals for Argentia.

On a non-dedicated basis, the ADC proposal shows requirements to use all of the fleet dock. This could be workable, providing, of course, that there was not a significant increase in other vessel traffic. In addition, there are a number of other problems. The Department of National Defence have a specific priority for berthing at the dock which services the fuel line to the two fuel tanks near the Coast Guard Vessel Traffic Management Centre. Also, Seabase Limited, in association with Sterling Limited, have indicated their interest in developing a supply base using part of the existing fleet dock.

6. Narrow Market Area for a Supply Service Base.

Argentia's case would be stronger if the foreseen centre of offshore activity was expected to be the Southern rather than the Northern Grand Banks. With the Northern Grand Banks, there are other potential supply base sites outside St. John's which are closer than Argentia to the Northern Grand Banks and NE Newfoundland offshore areas. Furthermore, with the probable pace of development scenario (controlled development), and if improvements in St. John's Harbour are made, there may be no need for any major new supply bases at all beyond St. John's.

7. A Supply Base with More Stringent Requirements Likely.

For exploratory drilling, say two drilling rigs, the use of Argentia as a supply base appears, in our judgement, feasible because only one or two docks would be required. There would likely be a de facto

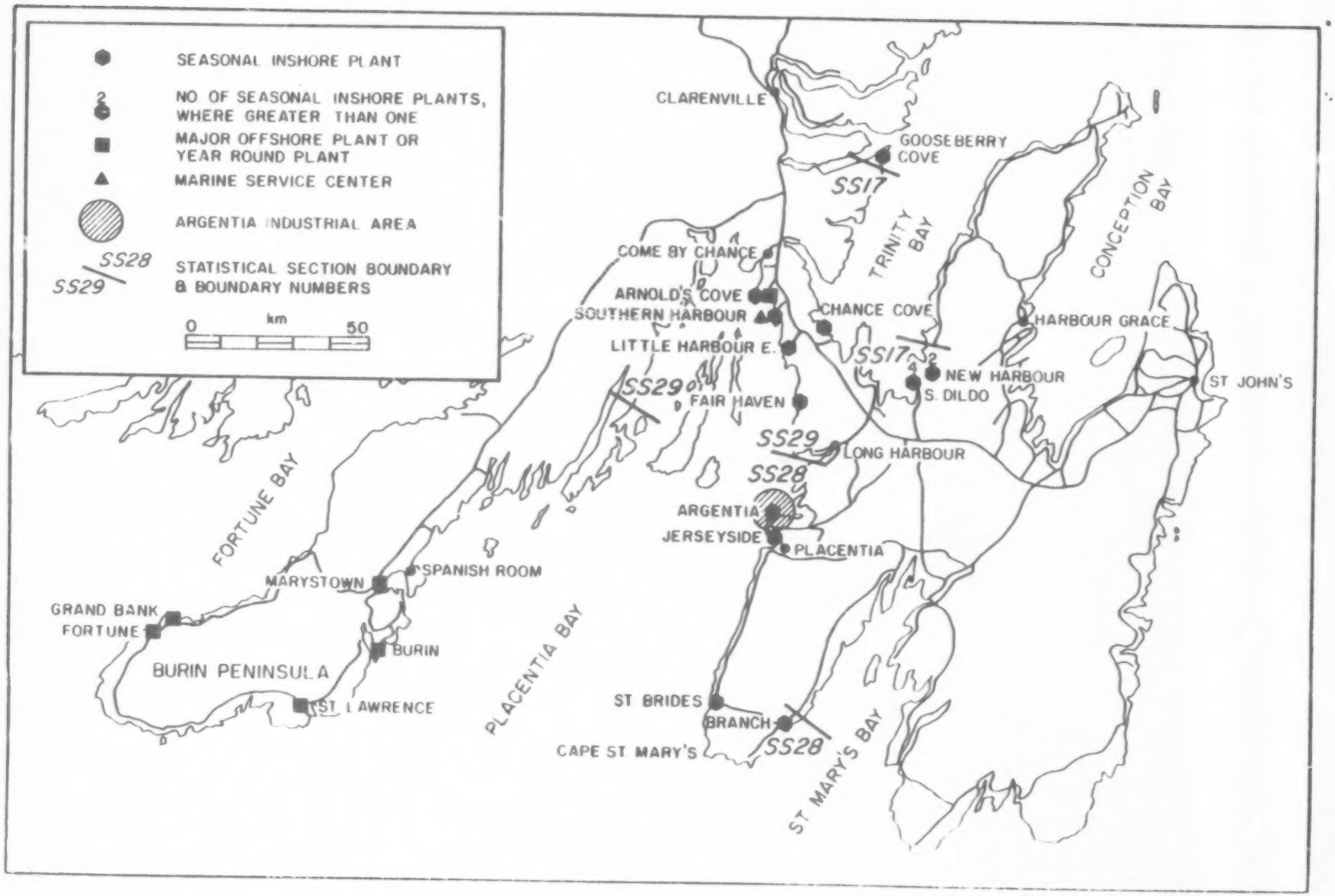
recognition that a certain area of the fleet dock was for supply vessel use. A similar situation occurs in Long Pond, where there are three regular users of what are classified as three public docks. However, the vessel traffic visitation levels at Long Pond are much lower than would be the case for a supply base dock at Argentia.

In conclusion, there appears at present to be insufficient demand to necessitate the building of a major integrated supply base at Argentia. This statement is based on the relative scale of projected offshore activities as invisaged by the Petrolum Directorate, and also on the likelyhood of the probability centres of offshore activity proceeding somewhat in a northerly direction, which would be further from Argentia but much closer to other "greenfield" sites on the Avalon Peninsula and in northeastern Newfoundland. However, Argentia's ice-free advantage is a factor. A "major integrated supply base" is taken to mean a fully developed supply base consisting of offshore development supplies (eg. regional pipe centre), a number of supply operations with their necessary facilities and equipment, as well as support industry and services. If the scenario is changed whereby accelerated offshore development is permitted by the Provincial Government, then the possibility for a major integrated supply base at Argentia could become more attractive.

On the other hand, our analysis indicates that a smaller-scale supply/service base would be possible, and proposals have already been received by the Department of Development. In developing the land use plan, provision has been made for a suitable area which could accommodate a smaller scale base to be activated as and when the demand warrants. The plan is flexible enough to incorporate a major integrated supply base when and if required, assuming other demand for the land does not predominate.

EXHIBIT 25

MAP OF LOCAL STATISTICAL FISHING AREAS



VIII - ASSESSMENT OF OCEAN-RELATED DEVELOPMENT OPPORTUNITIES

A key to assessing the future development of ocean-related industries in large part depends on the development potential of the fisheries and related industries such as boat-building. These areas, if potential for growth exists, could have significant impact on the Argentia site, given its location next to a major fishing ground. These opportunities and their impacts for Argentia are assessed in this chapter. The detailed report is contained in the Appendices.

DEFINITION AND PROFILE OF THE STUDY AREA

In order to assess the potential fishing industry-related activities which might locate in the Argentia site as a result of demands from regional fishery activities, two broad area fishing zones have been delineated. The offshore fishing activities are considered only for a small geographical zone in the Burin Peninsula. Exhibit 25 opposite illustrates the inshore areas. One area covers fishing activities in Placentia Bay (Statistical Sections SS28 & SS29) and the other describes the activities in Trinity Bay (Statistical Section SS17).

Inshore Fishery

In total there are about 40 fishing communities located in the above two areas. Collectively they represent the following fishing profile.

EXHIBIT 26

Fishing Profile of Designated Fishing Areas (1979)

Item	Quantity
Number of Communities	40
Population (1976)	14,400
Number of fishermen	2,100
Landings (tonnes)	42,800
Value of landings ($000)	13,300
Inshore vessels (20' to 64')	760
Number of processing plants	17

SOURCE: DFO, Economic Services Branch.

In terms of landings by species, groundfish accounted for a quarter, mollusks and crustaceans accounted for close to two-thirds, and pelagics accounted for a further two-thirds. While pelagic and shellfish are expected to remain about the same over the next five years, groundfish are expected to almost double from 11,000 to 19,000 tonnes during this period.

Insofar as the processing plants are concerned, the majority of their operations are seasonal, with the exception of the National Sea Products plant at Arnold's Cove, which operates the full year. The majority of the plants have freezing and cold-storage capacities.

Fishery Infrastructure

Nearly all fishing communities are equipped with one or more of the normal fishery servicing facilities such as slipways, wharves, haulouts, bait depots, community stages, etc. Both federal and provincial governments have constructed fishing infrastructure of one kind or another. Southern Harbour has the only Marine Service Centre in Placentia Bay, and is also equipped with a marine railway. Most facilities are operated by the Department of Fisheries and are mainly used for servicing larger longliner-type vessels. There is, however, no facility of this kind in the Trinity Bay zone. Small boats throughout the study area utilize public slipways for maintenance operations and winter haulout.

Offshore Fishing and Processing Activities

The majority of harvesting and processing activities related to the Newfoundland offshore sector occur within eastern and southern Newfoundland between Cape Bonavista and Cape Ray. Activities in this sector are by large, vertically-integrated companies which operate on a year-round basis. Relevant profiles of the offshore industry are:

- the main centre of offshore activity for the purposes of this study occurs on the Burin Peninsula across Placentia Bay from the Argentia site;
- the Burin region contains five of the major offshore processing plants;
- about 41 of the 90 or so vessels classed as offshore trawlers account for 21% of total fish landings in eastern and southern Newfoundland;
- the offshore harvesting sector has been under strict quota management since 1977 and there has been a freeze on new entrants to this fishery since 1974. However, during this

period, a number of older vessels have been replaced with newer models. A number of these vessels have been purchased fully outfitted from Europe. However, new offshore trawlers have been constructed at Marystown Shipyard;

- Companies operating offshore vessels on the Burin Peninsula undertake regular general fleet maintenance using "in-house" servicing crews attached to various plants (major servicing of vessels, i.e., yearly inspections or major engine repairs, etc., are undertaken at the Marystown facility).

FISHERIES OUTLOOK AND IMPACT ON ARGENTIA SITE

Following the declaration of a 200-mile economic zone, reductions in foreign offshore fishing and the implementation of new fisheries management policies by the federal government, lead to a steady but gradual improvement, and the year 1979 was a record one for the industry. Total fish landings were 569,000 tonnes valued at $156 million, and final product sales reached a level of $410 million. Between 1976 and 1979, landings increased by 40% while exports rose by 120%. In 1979, it was predicted that by 1985 fish landings would rise to over one million metric tonnes and increase in value by a factor of two.

However, since early 1980, the Newfoundland fishing industry has suffered a number of setbacks, and has been in relative decline since the boom year of 1979. Landings in 1981 were down by 100,000 tonnes over 1979, while the value of fish harvested dropped by $8 million over the same period.

The current down-turn is felt to be related to a series of inter-related factors including: reduced demand and lowered prices for fish products in the U.S. markets; rapid escalation of fuel, labour and other input costs; and during the past 18 months, rapidly rising carrying charges on capital and inventory due to high interest rates. The situation in the Newfoundland industry has also been aggravated by a series of labour management problems, a 1981 failure in the inshore fishery, and increased competition from other world fish producers.

At present the industry may be said to be in a state of great uncertainty concerning its ability to maintain current levels of production and achieve its future growth potential.

Balanced against the rather pessimistic short-term outlook is a recognition that in the longer term, overall market potential and growth appears favourable.

Impact on the Inshore Harvesting Sector

An examination of previous fishery studies for eastern and southern Newfoundland indicated that the projected increase in landings over the period 1980-1990 was in the order of 50%. Further analysis showed that this increase could, in all probability, be taken by the same number of inshore vessels as were active in 1979. This means that higher inshore landings could be achieved through increased catch rates, due to more abundant resources, and by more efficient utilization of vessels and existing gear. In other words, over the next five to ten years one is not likely to see large numbers of new participants entering the regional fishery; hence no new additions to the existing fleet can be expected.

For the purpose of this study it is projected that the tendency will be towards the gradual replacement of the existing inshore fleet. New vessels will enter as older boats are removed and replaced, or as full-time fishermen move to obtain larger and more sophisticated replacements.

Impact on the Offshore Harvesting Sector

While a projected increase in offshore fleet landings is anticipated over the period 1982-1990, in light of present troubles this increase is not expected to result in an expansion of the present fleet. Though there are currently strict controls on the entry of new vessels, the expected increase in landings will, in all likelihood, be achieved through higher catches per vessel. The general trend will be the gradual replacement of older vessels, particularly existing side trawlers, with slightly larger and more efficient vessels. The general indications are, therefore, that the number of vessels in the future fleet will be less than that which currently exists.

Impact on Inshore/ Offshore Processing

The 1979 inshore landing level of 42,000 tonnes supported the activities of the 17 plants, but since all but one of the processing operations were seasonal inshore firms, there no doubt exists a considerable amount of over-capacity. In spite of the projected increase in groundfish landings in 1987, it cannot be concluded however that additional plants will be required due to the large over-capacity which exists. In fact, a reduction in the number of plants can be expected. This trend will be reinforced by plant consolidation, investment in mechanization, and efforts to increase productivity of existing plants. We therefore conclude that no new plants will likely be constructed.

Insofar as the offshore sector is concerned, two major firms operate processing and trawling operations on the Burin Peninsula. One company has already indicated that it might eliminate one of its operations in that area, while the other company has, temporarily, ceased operations at Marystown in order to undertake improvements designed to upgrade plant efficiency. Based upon these general considerations, it is reasonable to conclude that no new offshore processing plants will be constructed either on the Burin Peninsula, or within the Argentia site area.

PRIMARY LANDING AND DISTRIBUTION CENTRE CONCEPT

In 1977 the Government of Newfoundland commissioned a comprehensive study [1] to assess the feasibility of creating a Primary Landing and Distribution Centre (PLDC) strategically located with respect to the expanding northern cod stock. Argentia was one of seven sites that were examined.

The overall cost of this venture, including shore-based facilities and harvesting technology, was calculated at $216 million (1978) dollars, although this figure excluded interest charges.

At present, the overall economic climate and current conditions in the Newfoundland fishery would seem to make implementation of this project extremely unlikely either at Harbour Grace or Argentia. For example, caplin resources have not improved as initially projected, northern cod stock TAC's are already fully exploited by existing fleets, and it is provincial fisheries policy to favour the inshore fleet in allocating shares of this resource.

Thus it is our conclusion that a project similar to that proposed for a primary landing and distribution centre has a very low probability of being developed, either at Argentia or anywhere within Newfoundland.

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(1) Government of Newfoundland and Labrador, Department of Fisheries, Primary Landing and Distribution Centre Feasibility Study, March 1978.

OTHER OCEAN-RELATED INDUSTRIES

Other possible industries were examined - ones that already have a presence on the site.

Cold Storage and Transshipment Services

At present, A. Harvey and Co. Ltd. uses facilities on the Argentia site to carry out cold storage and transshipment services for the Newfoundland fish products industry. These activities are undertaken through a subsidiary firm, Argentia Freezers and Terminals Limited. It is one of two product consolidation, cold storage and transshipment firms used by the fishing industry. Another public cold storage firm (Associated Freezers) is located at Donovan's Industrial Park near St. John's.

Cold storage facilities which were developed by the provincial Department of Fisheries are located in Buildings 12 and 57. Both buildings are leased from the province and have, in total, about a 4-million pound capacity. Together the two buildings contain seven cold storage units, each with independent controls.

The firm deals with about 35 processing and fish-buying companies including several foreign buyers. Yearly product throughput is about 10 million pounds, but there is a high seasonal variation and most of the demand occurs in the period from June to November.

Products are delivered throughout the processing season and stored to await shipment on container vessels. If a vessel is loaded in port, products arriving by truck are loaded directly onboard; when a suitable vessel is not at hand, the firm stores the product in cold storage usually until quantities available can justify a full vessel load. About 20 ships per year load product designed for various markets.

Most problems and disadvantages relate to conditions at dockside. The present waterfront space is adequate only as long as a small number of ships are present at any one time. The existing dock, especially the wooden portion, is unusable and needs major repairs. For more efficient operations, the waterfront facility requires additional support services such as water supply, communications and wharf lighting.

The company feels that it could expand its operations at Argentia in order to meet all the demands for its services.

Ideally they would need about a 10 million pound total capacity preferably within one new building. Any new facility should be as near as possible to dockside with the outer wharf forming part of the cold storage structure. A facility of about 40,000 sq.ft. (approximately double the existing area) would be required at a cost of approximately $4 million. This building would best be located near the existing concrete dock.

The local manager noted, however, that no new investment will occur at Argentia until the present lease arrangements are changed.

Salt Supply Operations

A. Harvey and Company Limited has recently (June 1982) begun a fisheries salt supply operation on site as well. This is being undertaken on a trial basis, with the primary intention of serving the salt fish processing sector. It is intended that salt would be supplied to various Island and Labrador plants by road and by sea transport.

About 8,000 tonnes per year will be landed at Argentia, bagged and then transshipped. This activity will take place in Building 614 and is estimated to employ around 6 persons from the local area.

One large vessel could deliver this amount in a single shipment. The 8,000 tonnes represents about one-third of the total Newfoundland salt fish industry requirements in 1981. Assuming that this operation would redistribute about three-quarters of the salt via marine transport, the following level of activity could be involved:

- shipments would occur between April and August at the rate of about one per week;
- a 350-tonne capacity vessel could supply local coastal needs;
- loading of the carrier would require 8 to 12 hours per shipment.

Boat Building Facilities

In 1979 there were three boat-building yards and one major shipyard operating in the Placentia Bay area. Small boat construction occurred at Little Harbour East (Hannson Boat Craft Limited), at Argentia (Neldo Marine Development Co. Ltd.), and at Placentia (Placentia Bay Development Association). At the present time there are only two active boatyards in the study region: Neldo Marine and J. McEntaggart at Dildo. This reflects the low level of activity being experienced throughout the industry in 1982.

It is likely that a high percentage of these vessels, when replaced, will be constructed of wood by the existing boatyards. Trends towards the use of steel and fibreglass as alternative hull construction materials have been noted. Three yards in the Province now have the capacity to build in steel, and two in fibreglass. All these facilities are presently operating well below capacity and are projected to be able to absorb the growth in demand which may occur to 1987.

Neldo Marine Development Company Limited is presently located in Building 600 on the Argentia site, manufacturing fibreglass boats. The premises is leased from the Province at the rate of $1.50 per square foot, or an annual rental of $22,000. Most of their product is sold outside the Placentia Bay area and, hence, its demand is not strongly related to local demand. The firm would not expand its operations in the Argentia site and feels that a better rental lease could be obtained, for example, from the Harmon Corporation in Stephenville.

Argentia Fish Processing

For several years, a fish processing operation has been located on the Argentia site in Building 58 near the existing concrete dock. The facility was formerly leased and managed by Argentia Fisheries Limited, but this firm ceased operations due to bankruptcy in 1981. At present Blue Ocean Products is the operator. No expansion of this operation is envisaged over the longer term.

Light Manufacturing/ Servicing Industries

The small number of processing plants which will be operating in the Placentia Bay/Trinity Bay area over the next five years may offer some incentive for certain types of industry-related firms to locate at Argentia. However, it is generally felt that the fish processing sector in Newfoundland does not generate strong backward linkages in the provincial economy. As such, the potential for new fishery-related industries to locate at the Argentia site, as a direct result of demands generated by the fish processing sector at the regional or local level, will be further reduced.

Larger firms, especially the vertically-integrated trawler companies, require a large number of material and service inputs, but most of these are obtained from suppliers located in the major centres such as St. John's. Even where linkages do exist between the fishing industry and service firms, the general tendency is for these supply companies to be located in larger centres of population and economic activity.

Field research undertaken by NORDCO in 1980 and 1981 shows that the value of goods and services purchased by fish processing companies is large even for some of the smaller firms. For example, one small firm purchased between $10,000 to $20,000 worth of goods and services for every 1,000 tonnes of fish processed, while another firm during the same time spent about $40,000 per 1,000 tonnes. Larger processing plants make extensive purchases; data from three large trawler plants shows that they purchased, on average, $243,000 worth of local (Newfoundland) goods and services for each 1,000 tonnes of fish processed. In spite of these levels, it is unlikely that major fish supply companies would relocate at Argentia simply to serve the regional processing sector. These companies are firmly entrenched in the St. John's region in order to maximize economies of scale and to maintain close communication with headquarter offices of the larger fishing

companies. Some possibility exists, however, that a small freezer/cold storage servicing firm might locate at Argentia to provide assistance to processing companies using this type of equipment.

Maintenance and
Repair Function for
Inshore Harvesting

Vessel owners from both Trinity and Placentia Bays might, however, make use of servicing firms which locate on the Argentia base. Possibilities include firms engaged in such activities as engine repair, fishing gear maintenance, electronic equipment servicing, etc.

This group would involve the potential development of a number of small-scale marine industrial servicing firms related primarily to local and regional fishing and processing activities. Included here would be the potential location of a number of small firms engaged in supplying a limited range of fishing industry services such as: electronic equipment servicing, machinery and engine repair, gear supplies, packaging materials, or freezer/cold storage equipment servicing.

The location of a major Marine Service Centre at Southern Harbour suggests that a high level of vessel maintenance activities on the Argentia site would not be extensive since that facility would be expected to satisfy the majority of regional demand for vessel servicing and repair. Since these service centres are fully equipped with haul-out machinery, covered working space and required tools, etc., it will continue to remain the centre of small boat repair activities in Placentia Bay.

Marine/Rail Services

At the present time, CN Marine operates a Ro-Ro car ferry service between June to September handling roughly 25,000 vehicles per

season. In order to obtain improved utilization of these facilities they attempted to attract truck trailers to use the service between Sydney and Argentia but without success.

There is also another fixed concrete structure which was installed to handle vehicle traffic by a private entrepreneur however, it really did not get off the ground. It still exists located between the SCH and the fleet dock area. The structural condition is unknown at this time but from field observations it would appear to offer limited use.

In terms of future prospects resulting from offshore and presently known ocean-related activities, there does not appear to be an obviously significant use for these facilities. Most transportation would likely be done by water, with some rail and road usage. CN Marine has indicated that the present traffic level at Argentia is uneconomical since they are only obtaining partial use of these elaborate Ro-Ro facilities at the present time.

In conclusion, therefore, given the extent of present information and understanding, we have to conclude that the prospects for a major Ro-Ro operation at Argentia at this time appears limited.

CONCLUSIONS

The potential for development impacts on the Argentia site appears to be low, insofar as fisheries and fishery-related activities are concerned. Some minor impacts do, however, exist, and allowance in land use designation should be provided.

1. Harvesting. Growth prospects appear reasonably good for groundfish over the next 5 years. However, given the large over-capacity of both the inshore and offshore vessels, only limited growth in vessels is foreseen.

Provision of recent new wharf facilities for inshore vessels presently located adjacent to the fleet dock appear to be adequate for the long term.

2. Processing Plants. A similar situation exists for inshore and offshore processing plants. Over-capacity will mean that no additional new plants are likely to come on stream.

3. Primary landing and distribution centre. The multi-million dollar scheme for a major primary landing and distribution centre does not appear to be warranted at this time. Excess costs and the lack of resources preclude development of such a scheme.

4. Expansion of cold storage and transshipment services appear possible.

At present, cold storage and transshipment services presently conducted in Building 57 show growth promise. Doubling of the plant's size to 3700 m^2 (40,000 sq.ft.) appears good. This could provide cargo traffic of about 20 ships per year. Expansion, however, will likely depend in part on the U.S.A. "re-entry clause" being cancelled.

5. Salt supply operations.

A. Harvey & Company Limited have included a salt supply operation that is stored in Building 614. This activity is likely to continue at the existing level for some time in the future. Requirements would likely include one supply

vessel for delivery to Building 614, and shipped out at a rate of one vessel per week between April and July. Loading could take 8 to 12 hours.

6. Boat building not expected to expand

The existing boat-building operation in Building 12 is not expected to expand. At best it may continue to operate at its present level because of the boat subsidy freeze announced by the federal government.

7. No expansion is forecasted for the Argentia fish processing plant.

Present fish processing operations, on the Argentia site, are not expected to expand due to soft markets.

8. Some potential exists for light manufacturing and servicing industries.

Some potential appears to exist for small service and manufacturing firms to locate in Argentia, particularly for small-scale marine industry servicing.

From the present overall perspective, a secondary manufacturing and servicing industrial park appears warranted. It is difficult to predict with any degree of certainty at this stage, but when a supply and fabrication yard is established, it could provide impetus for the industrial park to grow and expand.

In our judgement, a provision should be set aside for this purpose. ranging from 2 to 5 hectares in the vicinity of the small craft harbours basin.

IX - ARGENTIA RUNWAY FACILITIES

The Argentia site has three runways of sufficient size to accommodate the most modern commercial aircraft. The question arises as to whether any potential use can be made of these facilities; and if so, how? This issue could not only affect the present commercial operation in the Province but could also affect the future negotiating position with the U.S. government regarding the re-entry clause. The detailed report is contained in the Appendices.

DESCRIPTION OF FACILITIES

The airport is made up of three major runways as follows (see previous Exhibit 4):

- 07.25 (magnetic bearing) 2265 metres long;
- 16.34 (magnetic bearing) 1760 metres long;
- 11.29 (magnetic bearing) 1545 metres long.

All runways are 90 metres wide and there is also one taxiway parallel to runway 07.25, which is 23 metres wide. All runways are paved with macadam; the ramps and parking areas are of concrete.

Buildings

These runways are supported by approximately five hangars totalling about 32,500 m^2 (350,000 sq.ft.). Some of these are used by the Province (i.e., storage of provincial water bombers), some are used for private storage and manufacturing, and some are simply vacant. All the buildings have been allowed to deteriorate and consequently are in various states of disrepair. Additional miscellaneous support buildings are in a similar condition.

Fuel Storage Tanks

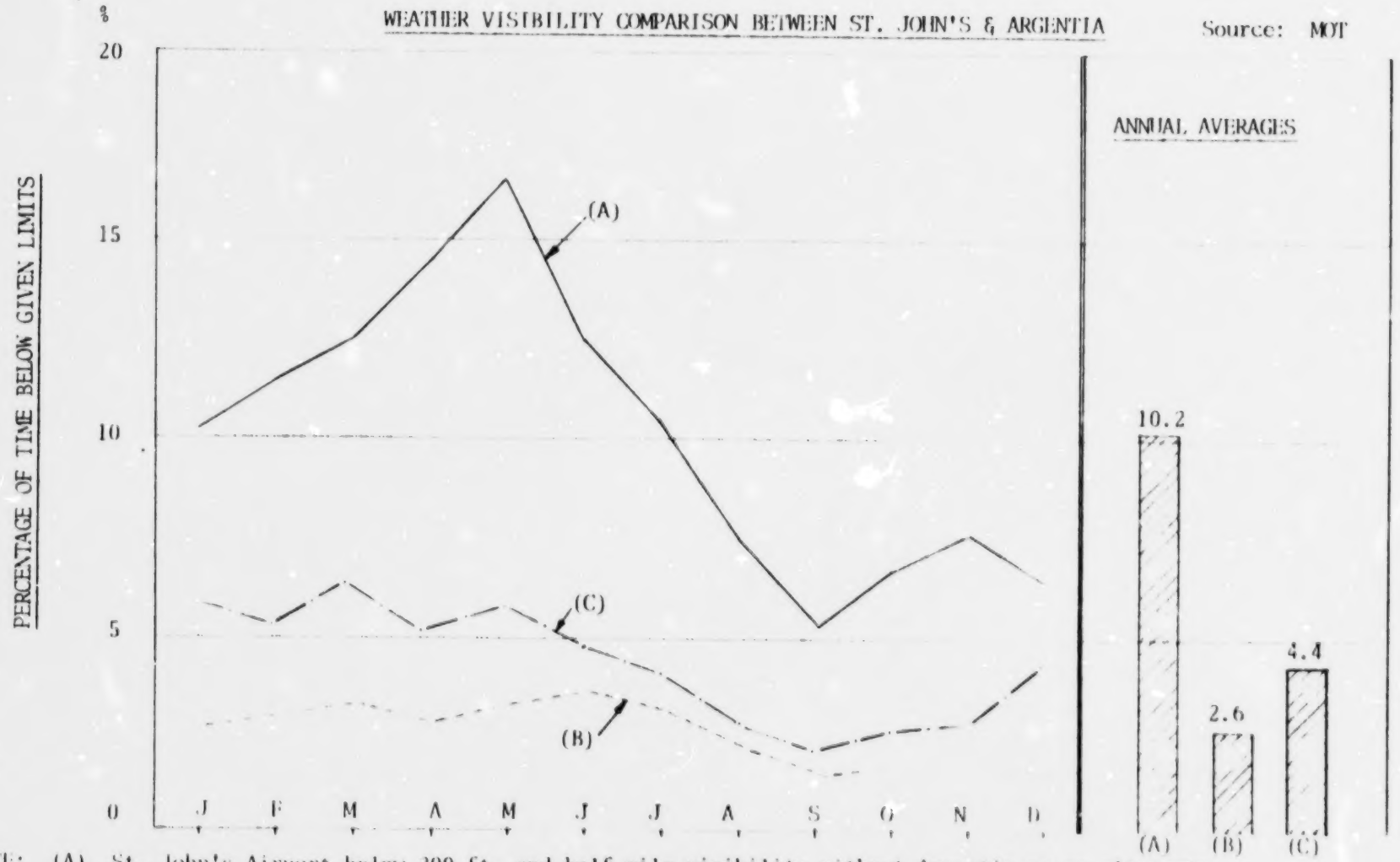
In addition there are 15 underground storage tanks (capacity of 27,500 U.S. barrels/tank) which were designed for support of

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 27

WEATHER VISIBILITY COMPARISON BETWEEN ST. JOHN'S & ARGENTIA

Source: MOT



NOTE: (A) St. John's Airport below 200 ft. and half mile visibility without Argentia as an alternate.

(B) Argentia as alternate with both stations having visibility below 200 ft. with half mile visibility.

(C) Argentia as alternate with St. John's below 200 ft. with half mile visibility/Argentia below 500 ft. with 1 mile visibility.

naval and airport operations. However, various tanks are being used for storage purposes (i.e., calcium chloride, Bunker C) and some are simply vacant. The rehabilitation of the bulk storage tanks for aviation fuel is a cost consideration in any rehabilitation that would be contemplated.

Communications

These are nonexistent insofar as any extensive operations of aircraft is concerned. A non-directional (NDB) beacon has recently been installed near the Canadian Coast Guard building. It is an enroute facility since Argentia is used as a checkpoint on the Torbay-Sydney airway route.

WEATHER CONDITIONS

The weather at Argentia can be described as having a cool damp marine climate. Exhibit 27 opposite illustrates a comparison of visibility for both St. John's and Argentia. It shows that the annual average where the ceiling is below 200 feet and visibility is then half a mile is 10.2% for St. John's as compared to 2.6% for Argentia.

This would imply an advantage for the Argentia runways:

- the distance by road is 210 km (130 miles) shorter from St. John's to Argentia than from St. John's to Gander;

- from an operational point of view, if Argentia were allowed to operate as an alternative airport, the aircraft would be able to carry less reserve fuel, depending on the flight route.

PRESENT USE AND STATE OF ARGENTIA RUNWAYS

At the present time the runways have no navigational aids, not even runway lights. They are, however, used as a storage area for the Province's water bombers and are occasionally used by small private aircraft.

A recent engineering survey[1] conducted by MOT indicated that the runways were in a state of disrepair. Specific findings indicated:

- taxiways are in a state of disrepair;
- aprons are covered with grass, broken and have spalled concrete;
- 90% of asphalt on the runways is decomposed and in some sections the concrete is broken;
- no lighting systems;
- airport buildings have been vandalized and are of no value;
- approach lights are dismantled.

It concludes that substantial investments would be required to bring the runways and taxiways up to some acceptable standard. Also, any upgrading that would be carried out at St. John's Airport would tend to negate the possible use of Argentia as a designated alternative.

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(1) Ministry of Transport, Engineering Survey of Argentia Area, June 1981.

We now understand that the recent installation of the ILS on runway 11 at St. John's has greatly facilitated the arrival of scheduled flights under extreme instrument conditions. While the surrounding terrain has some adverse affect on the ILS signal, the introduction of the MLS (microwave landing system) will eliminate such interference.

ROTARY WING AIRCRAFT

Argentia has already been designated by MOT as an alternate for St. John's (Torbay). At present the landing area is adjacent to the MOT Coast Guard station on the west side of the Argentia peninsula. It would appear that the area from a climatic point of view (shelter) is not conducive to good operations.

There are several locations adjacent to the 07-25 runway which would be more advantageous. The investment would be relatively low and would facilitate picketing of aircraft and protection against winds and weather.

CONCLUSIONS

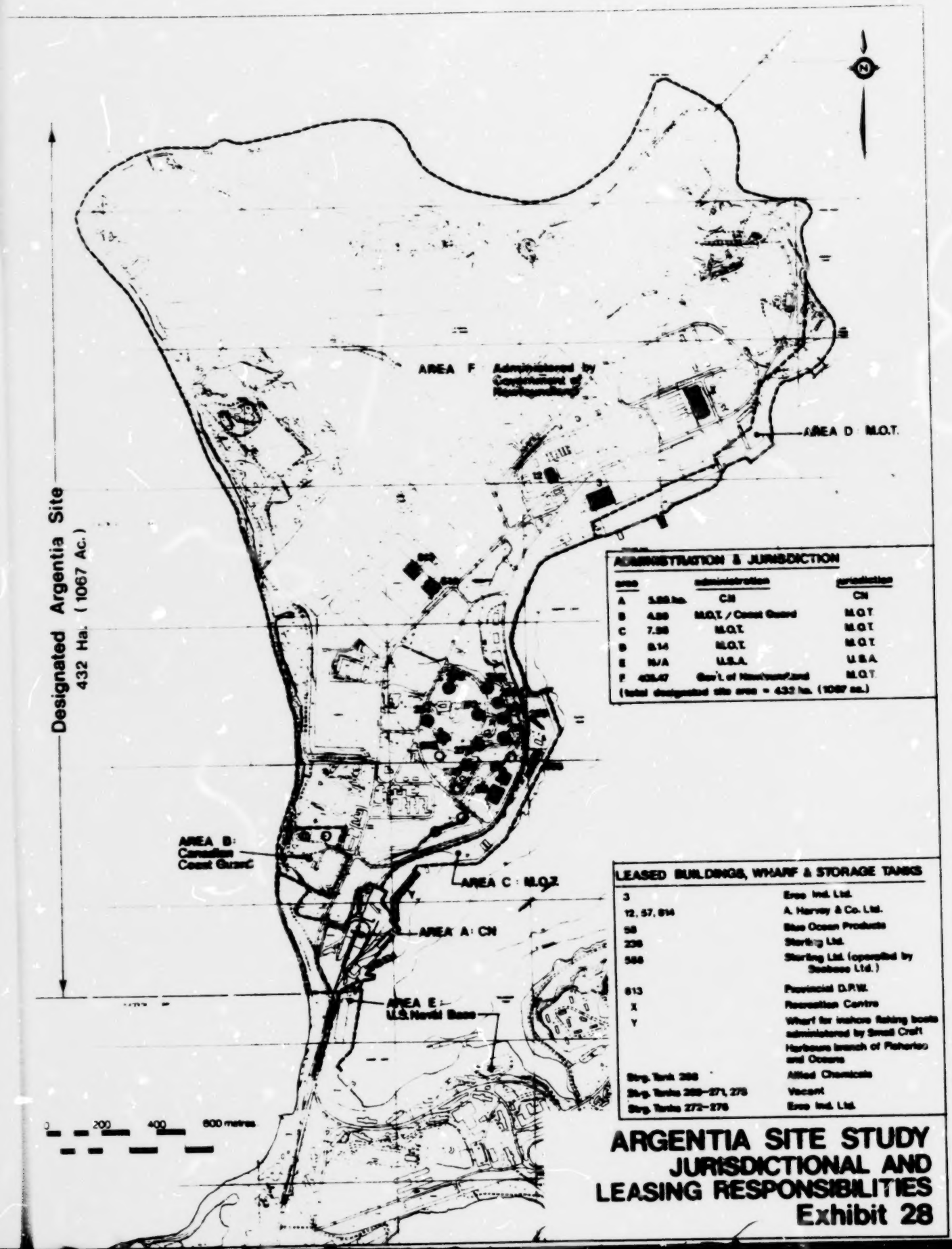
In the short term, little potential exists for the use of all the runways on the site. While there might be some advantage in their serving as a designated alternative, this would likely be outweighed by the improved instrumentation at St. John's (Torbay) coupled with the cost of rehabilitation.

In the longer term, a fabrication yard coupled with a major supply base could generate light traffic to keep one runway at minimal acceptable standards likely for small aircraft. On

this basis one runway would only be required, namely 07-25 (magnetic bearing). A transshipment base for northern oil exploration may hold some long-term potential. This would suggest a strategy of returning the runway for as long as possible until an actual need arises for the land or a future prospect materializes.

Insofar as rotary wing aircraft is concerned, the possibilities look more interesting. A forecast of offshore requirements based on the Petroleum Directorate's forecast indicates that some 35 aircraft would be required by 1990, representing some 4300 helicopter days. If this can be combined with other possibilities such as a training centre and coastal operations, the demand for a base would be assured. Argentia has already been designated as an alternative for St. John's for the operation of the Okanagan/Universal Sikorsky S-61.

Discussions with MOT officials indicate that to bring the 07-25 runway, taxiway and a helicopter pad to a minimum standard for private use (VFR rules) would cost an estimated $2.7 million, excluding operating costs.


Designated Argentia Site
432 Ha. (1067 Ac.)
AREA F Administered by Government of Newfoundland
AREA D M.O.T.
AREA B: Canadian Coast Guard
AREA C: M.O.T.
AREA A: CN
AREA E: U.S. Naval Base
0 200 400 800 metres
ADMINISTRATION & JURISDICTION
Area
administration
jurisdiction
A 3.65 ha. CN CN
B 4.86 M.O.T. / Coast Guard M.O.T.
C 7.56 M.O.T. M.O.T.
D 8.14 M.O.T. M.O.T.
E N/A U.S.A. U.S.A.
F 405.47 Gov't. of Newfoundland M.O.T.
(total designated site area = 432 ha. (1067 ac.)
LEASED BUILDINGS, WHARF & STORAGE TANKS
3 Esso Ind. Ltd.
12, 57, 614 A. Harvey & Co. Ltd.
58 Blue Ocean Products
226 Sterling Ltd.
586 Sterling Ltd. (operated by Seabase Ltd.)
613 Provincial D.P.W.
X Recreation Centre
Y Wharf for inshore fishing boats administered by Small Craft Harbours branch of Fisheries and Oceans
Stg. Tank 269 Allied Chemicals
Stg. Tanks 269-271, 275 Vacant
Stg. Tanks 272-276 Esso Ind. Ltd.
ARGENTIA SITE STUDY
JURISDICTIONAL AND LEASING RESPONSIBILITIES
Exhibit 28

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 29

PRESENT UTILIZATION OF EXISTING FACILITIES

Map Designation Numbers	Use	Lessee
X	Recreation Centre	Local community
Y	Inshore Wharf	Small Craft Harbours Branch (DFO)
272, 273, 274, 275, 276	Storage Tanks	Leased by Erco Industries Limited (Bunker C)
269, 270, 271, 277, 278	Storage Tanks	Available for lease
611, 612	Storage Tanks	DND
268	Storage Tank	Allied Chemical (calcium chloride)
3	Building	Erco Industries Ltd.
12, 57	Freezer Storage	Prov. Dept. of Public Works operated by Argentia Freezers Ltd. (cold storage and trans-shipment of fish)
614	Building	A. Harvey & Co. Ltd. (salt storage)
58	Building	Blue Ocean Products (fish processing)
556	Building	Sterling Limited (operated by Seabase Limited)
238	Building	Sterling Limited
613	Building	Provincial (DPW)

X - ALTERNATIVE LAND USE DEVELOPMENT CONCEPTS

A matching of the requirements from various opportunities (i.e., offshore and ocean-related industries) to the capability of the Argentia site indicates there are alternative land use possibilities. Essentially, these could be designated as low, medium and high utilization of the site area, depending, of course, on the strategy adopted in negotiating the U. S. right of re-entry clause.

PRESENT USE OF FACILITIES

The present use of facilities on a short-term lease arrangement at the Argentia site is shown in map form in Exhibit 28 opposite and summarized in Exhibit 29 opposite.

The above facilities are also located under different administrative jurisdictions. Areas C and D (wharf areas) are administered by MOT and consist of 15.8 ha wharf and support land. Area F, consisting of 404 ha, is administered by the Province. Area A, consisting of 6 ha, is owned and operated by CN Marine,(1) while Area B, consisting of 6 ha, is leased by the Canadian Coast Guard.

The total land base area is close to 432 hectares. Essentially, the federal government administers most of the water access areas, while the Province administers the runway areas.

There is no specific plan of development for land use in effect at the present time. Leasing is done purely on a "first come - first serve" basis and caters entirely to the lessees' requests. When the potential of offshore requirements is superimposed on

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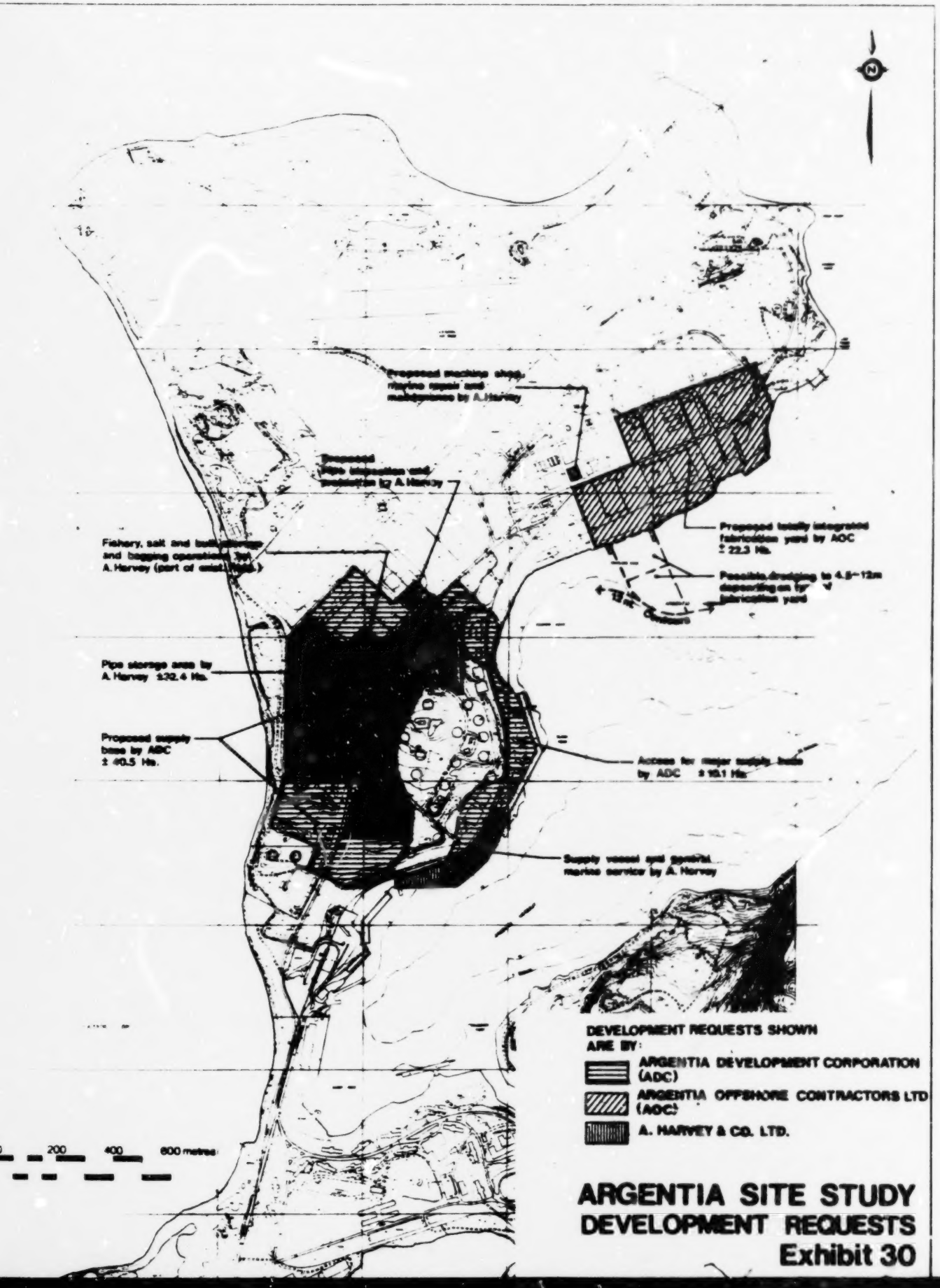
(1) The right of full ownership was established by Federal Order-In-Council and, as such, is exempt from the contractual U.S.A./Canada agreement.


Proposed machine shop, marine repair and maintenance by A. Harvey
Proposed pipe fabrication and production by A. Harvey
Fishery, salt and bait storage and bagging operations by A. Harvey (part of exist. Plant)
Proposed totally integrated fabrication yard by AOC ± 22.3 Ha.
Possible dredging to 4.5–12m depending on fabrication yard
Pipe storage area by A. Harvey ±32.4 Ha.
Proposed supply base by ADC ± 40.5 Ha.
Access for major supply base by ADC ± 15.1 Ha.
Supply vessel and general marine service by A. Harvey
200
400
600 metres
DEVELOPMENT REQUESTS SHOWN ARE BY:
ARGENTIA DEVELOPMENT CORPORATION (ADC)
ARGENTIA OFFSHORE CONTRACTORS LTD (AOC)
A. HARVEY & CO. LTD.
ARGENTIA SITE STUDY
DEVELOPMENT REQUESTS
Exhibit 30

the designated site area, land use conflicts begin to emerge.

ARGENTIA SITE
DEVELOPMENT PROPOSALS

To date, some four proposals have been received by the Department of Development requesting land to service offshore development. Exhibit 30 opposite shows the various requests on an overlay of the Argentia site. Prospective developers include:

1. Argentia Offshore Contractors Limited (AOC)

   This request consists of approximately 22 hectares for a fabrication yard.

2. Argentia Development Corporation (ADC)

   This request consists of some 57 hectares of land, including all of the fleet dock, for a supply base and general servicing of offshore vessels.

3. A. Harvey & Company Limited

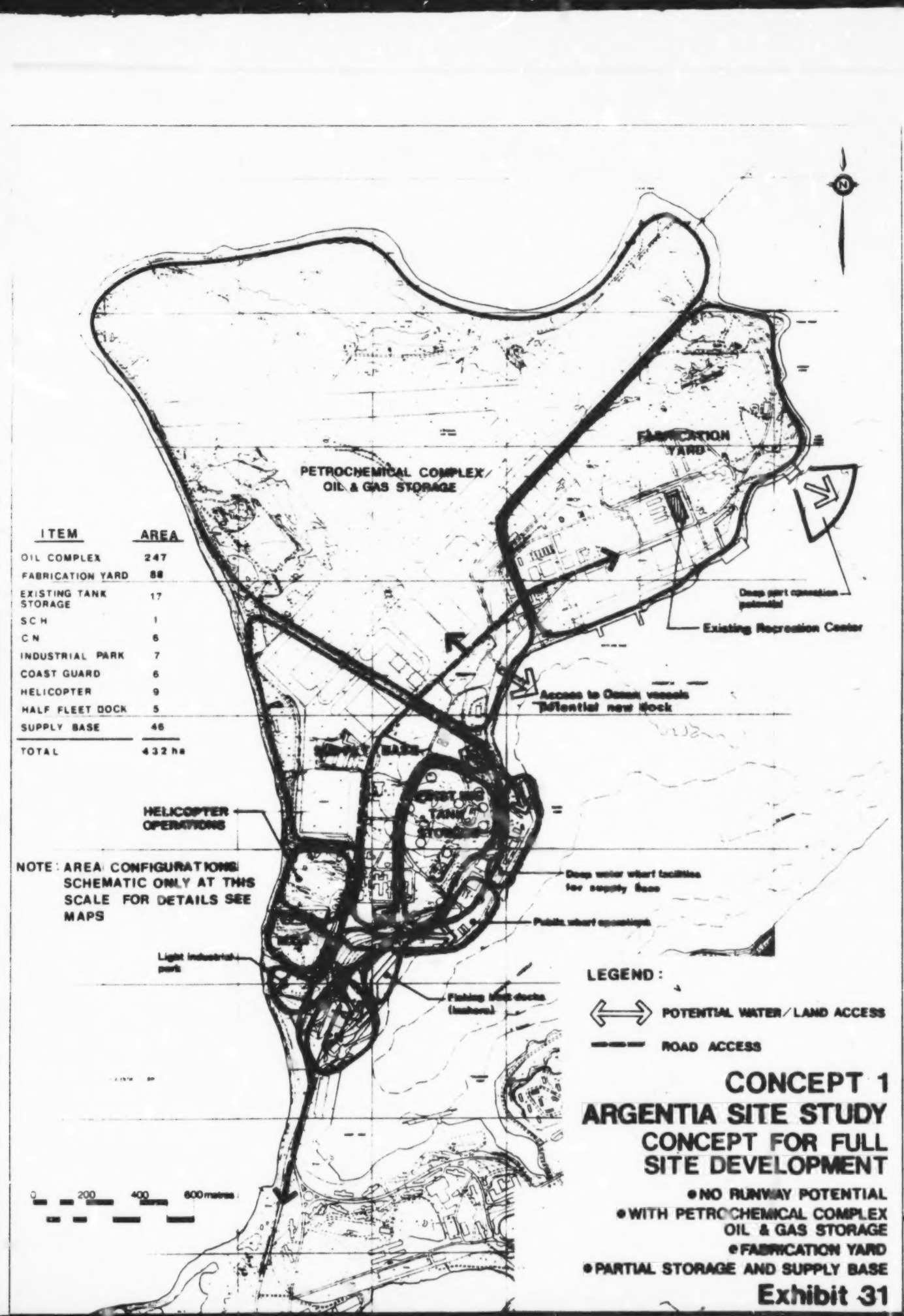
   This request consists of approximately 32 hectares for a supply base and pipe storage, including the southern portion of the fleet dock.

4. Seabase Limited

   This firm has subleased from Sterling Limited property and has indicated interest in establishing a supply base. Nothing as yet has been proposed.

As is clearly shown on the layout map, not only are there land use conflicts with existing activities, but also there is considerable overlap among the proposals.

In addition, there appear to be different views on dredging for a fabrication yard. AOC has indicated that no dredging is needed, but the Lundrigan Tri Ocean/Foster Wheeler study outlines dredging requirements ranging from 4.5m to 12.0 m. The former proposal is based on reclaiming land near the northern


PETROCHEMICAL COMPLEX/
OIL & GAS STORAGE
FABRICATION
YARD
Deep port operation potential
Existing Recreation Center
Access to Ocean vessels
Potential new dock
HELICOPTER
OPERATIONS
Deep water wharf facilities for supply base
Public wharf operations
Light industrial park
Fishing boat docks (harbour)
0 200 400 600 metres
ITEM AREA
OIL COMPLEX 247
FABRICATION YARD 88
EXISTING TANK STORAGE 17
SCH 1
CN 6
INDUSTRIAL PARK 7
COAST GUARD 6
HELICOPTER 9
HALF FLEET DOCK 5
SUPPLY BASE 46
TOTAL 432 ha
NOTE: AREA CONFIGURATIONS SCHEMATIC ONLY AT THIS SCALE FOR DETAILS SEE MAPS
LEGEND:
POTENTIAL WATER/LAND ACCESS
ROAD ACCESS
CONCEPT 1
ARGENTIA SITE STUDY
CONCEPT FOR FULL SITE DEVELOPMENT
• NO RUNWAY POTENTIAL
• WITH PETROCHEMICAL COMPLEX OIL & GAS STORAGE
• FABRICATION YARD
• PARTIAL STORAGE AND SUPPLY BASE
Exhibit 31

portion of the seaplane base and installing a deep-water port.

RATIONALE FOR LAND USE DEVELOPMENT

In developing alternative industrial land use concepts, a rationale was established as a guideline in the planning process. The rationale is based on the following considerations:

- development opportunities appear to be highest for a fabrication yard, followed by a supply base, and to a lesser extent, by light manufacturing/servicing industries;
- the right of re-entry may or may not be negotiated; alternative concepts must take this into consideration;
- development should proceed based on the most likely prospects, but the concept should remain flexible enough to accommodate long-term, and at present unknown, possibilities;
- since the integrity of the runways cannot be changed as dictated by the land lease arrangement, other uses have to be found which respects this condition.

With the above in mind, three development concepts have been formulated: full land use, partial land use and temporary land use.

FULL LAND USE: CONCEPT 1

This concept is founded on the basis that the re-entry clause could be eliminated and that the full land site area would be available for development. Exhibit 31 opposite illustrates a concept for full site development.

Petrochemical Complex or Equivalent

In the long term, some sort of petrochemical complex (or petroleum/LNG tank farm) is possible. Very little is known about how the offshore will or can develop. However, as an illustration, assume that Hibernia produces 200,000 barrels of crude oil per day. Since half of this could potentially be refined at Come By Chance, the balance therefore could be refined at a new complex located at the Argentia site. Rough criteria for such a complex, which would include a refinery and a derivative operation, could assume the following magnitude:

- output of refinery : 100,000 U.S. bpd.;
- output of derivative plant : 1 billion lbs./year;
- land area required : 260 hectares;
- direct employment level : 250 to 300 people;
- water requirements : 5 to 6 million U.S. gpd.;
- electrical requirements : 1.8 million Kwh/day.

Other functions also possible could include the following:

- oil transshipment ;
- LNG storage and transshipment;
- bulk handling of commodity products.

On this basis, it is suggested that the runways for fixed-wing aircraft be abandoned in lieu of the complex. The site identified would cover about 247 hectares with a window to the harbour.

Fabrication Yard

Because of the requirements identified in Chapter VII, the ideal site for a fabrication yard appears to be in the area north of the seaplane dock. As shown in Exhibit 31, this would consist

of 88 hectares of land, enough to accommodate 4 to 6 small yards, or 1 to 2 very large yards. The fabrication yard would have access to the site by a paved road and a rail line corridor. It would also have the advantage of the potential small deep-port access at the north end of the site. Further investigation may be required to determine whether any dredging may be necessary (based on the type of yard established). In addition, the recreation centre would have to be relocated. This area should be designated as a heavy-industrial park.

Supply Base

Approximately 46 hectares would be available for a very small supply base/open storage or a regional pipe storage yard (41 ha for a supply base and 5 ha of the fleet dock, including back-up lands). This area is relatively smaller in size than that required for a full supply base. It may well be, given the capacity of the St. John's Harbour, that a smaller supply base may be more appropriate.

Light-Industrial Park

A certain portion (7 hectares) should be set aside for secondary manufacturing and service industries. It could perform such functions as research/training, and mechanical and electronic repairs for the fishing and cargo vessels, fabrication yard and the petrochemical complex operations. It is believed that if a petrochemical complex were established, service branch plants might locate in the Argentia site to service this industry. With time, the industrial park could grow and utilize the space allocated for the smaller supply base (if this were not needed).

Air Operations

Approximately 9 hectares would be set aside for a helicopter base.

Storage Tanks

The storage tanks would be retained, but their condition would be assessed. Until such time as a need is identified in which the benefits would outweigh the costs of tank removal, they should continue to be used for storage of liquid bulk.

CN Marine Property

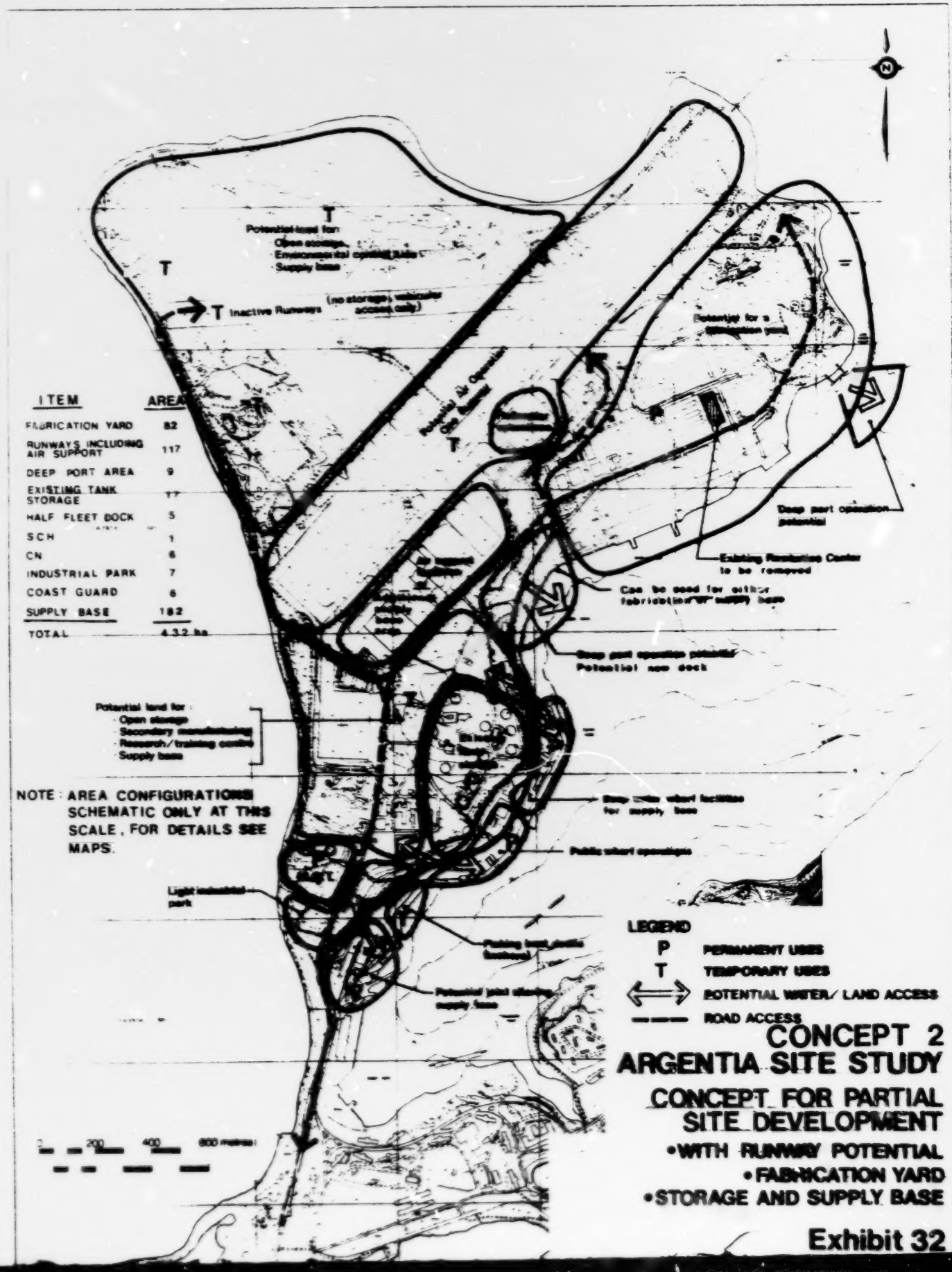
From conversations with CN officials, it appears that utilization of the equipment, facilities, wharves and building is declining. It could very well be that the property could be used to supplement the operations of the fleet dock.

Wharf Facilities

While insufficient data is available, it could be that the larger oil tankers and bulk carriers would need more capacity than the fleet dock could provide. A new wharf could be accommodated (approximately 500 metres), as shown in Exhibit 31, which would provide depths in the order of 9 metres at natural bottom. With dredging for 15 metre draft, this would open up the berthing capacity to accommodate 100,000 DWT oil tankers and 150,000[3] LNG carriers.

Transportation

The only applicable modes to be considered are air, rail and road transportation. It is believed that an area no greater than 9 hectares should be set aside for a helicopter base serving both the petrochemical complex and the supply/fabrication yard. Insofar as road and rail traffic are concerned, it is our general judgement that traffic by these modes will be relatively light after the initial construction. Most of the goods and services entering and leaving the site would be by sea.



CONCEPT 2
ARGENTIA SITE STUDY

CONCEPT FOR PARTIAL SITE DEVELOPMENT

- WITH RUNWAY POTENTIAL
- FABRICATION YARD
- STORAGE AND SUPPLY BASE

Exhibit 32

Further Investigations

The fleet dock represents a potential area of conflict in the proposals received by developers. In one case, dedicated use of the public fleet dock has been requested. It is unlikely that this condition could be met by MOT in view of the fact that other vessels use the dock for cargo, berthing or maintenance and repairs. This will require further study, but as a first approximation, half of the fleet dock would be required for a supply base. In any event, this area requires further attention.

Of more significance is the future role of presently-leased buildings, as shown in Exhibit 28. These are on a short-term lease arrangement, usually on a year-to-year basis, and in certain cases, conflict with the requests received from various developers. Certain operations may have to be relocated to appropriately designated industrial park areas in order to achieve land use compatability.

PARTIAL LAND USE: CONCEPT 2

The partial development concept is based on the right of re-entry clause being removed for the fabrication yard (82 hectares) and a general agreement to allow the establishment of a supply base (182 hectares would be developed as described under Concept 1). The upper range includes the possible use of the deep-port operations.

The balance of the property would be developed on the basis of temporary use which could be subject to re-entry. A partial land use concept is shown in Exhibit 32 opposite.

Air Operations

It is suggested that, given the air requirement for both the fabrication yard and the supply base operations, runway 07-25 (magnetic bearing) be brought up to a minimum standard for both fixed wing and rotary wing aircraft. The total area designated for a complete runway and helicopter operation, including air support facilities, would be about 117 hectares. Flexibility should be maintained for 15 hectares, which could be developed either into an air support facility for these aircraft or alternatively as an addition to the supply base.

Storage Tanks

The underground tank storage would follow the same approach as outlined under Concept 1.

Supply Base

Approximately 182 hectares could be set aside to service a potential supply base (includes the east area of the unused runways, half the fleet dock area and an area allocated for a light-industrial park). This is larger than that proposed under Concept 1 since it would utilize the space occupied by runways 16-34 and 11-29 (magnetic bearing). While the surrounding area could be used for open storage, the existing runways could be used for access roads. Storage on the runways would likely not be acceptable due to the possibility of damaging the surface. In the event of the re-entry clause being activated, the stored items could simply be removed. To fully utilize this area would require almost two large supply bases, including establishing a tubular pipe storage yard to serve the Atlantic region. The full utilization of this area for a level represented by a supply base operation appears too optimistic.

Second Wharf

Approximately 9 hectares have the potential of becoming a deep port. The support lands could be used as access either to the

fabrication yard or to the supply base, or serve both.

Transportation

Both the CN Marine and the inshore fishing docks would remain as is. Following the existing road system, it is proposed that two on-site arterial roads plus two on-site support roads be established:

- on-site arterial roads: two main arterial roads would likely be employed to provide access to the fabrication yard - one along the bottom of runway 07-25 and one adjacent to the fleet dock; further analysis would likely be required as to the need for additional capacity in the existing road;

- on-site support roads: one would branch out from the arterial road to service the 07-25 runway operation, and the other would serve the western portion of the two existing runways where storage is suggested;

- off-site access roads: some reports have indicated that a bypass road is required at Dunville to accommodate vehicle traffic. At this stage, the expectation is that vehicle traffic would be fairly high during the initial construction period but would drop off substantially after construction, at which time most of the traffic would be moved by sea (see Exhibits 12 and 23);

- rail: comments made for the off-site access roads would also be applicable in this case. However, it appears more than likely that the spur line from the CN property to the seaplane dock area would be required to handle some traffic. Consequently, some rehabilitation of the spur line would likely be required.

Fleet Dock

It would appear that full use of the fleet dock would likely be required - half to be used by the supply base operation and half to be used for other general cargo (e.g., salt, fuel, offshore supplies) and for servicing offshore vessels (e.g., diving support, rescue vessels, etc.).

Because of the pipelines to fuel tanks at MOT and the berthing rights enjoyed by the Canadian Navy vessels, it is suggested that the southern portion of the docks be allocated for general cargo traffic. The northern portion could be used to serve as access for the supply base. This arrangement would not interfere with the existing cold storage, transshipment and fish processing operations.

Light-Industrial Park

A small area of 7 hectares would be set aside for the creation of an industrial park for light manufacturing/servicing functions, as described in Chapter VIII. It is suggested that this area be located between MOT and CN Marine, adjacent to the inshore vessel wharf.

Its prime market would be fishing-related initially and could evolve to include support services to the offshore heavy industries.

Further Investigations

Two areas would require further investigation before finalizing the land use plan for the wharves:

- costs/benefits of upgrading the wharf to serve two major end-users (i.e., supply or general use); further analysis on what part of the fleet dock should be allocated for the supply base; (2)

- jurisdictional problem of obtaining dedicated wharf space on a public wharf.

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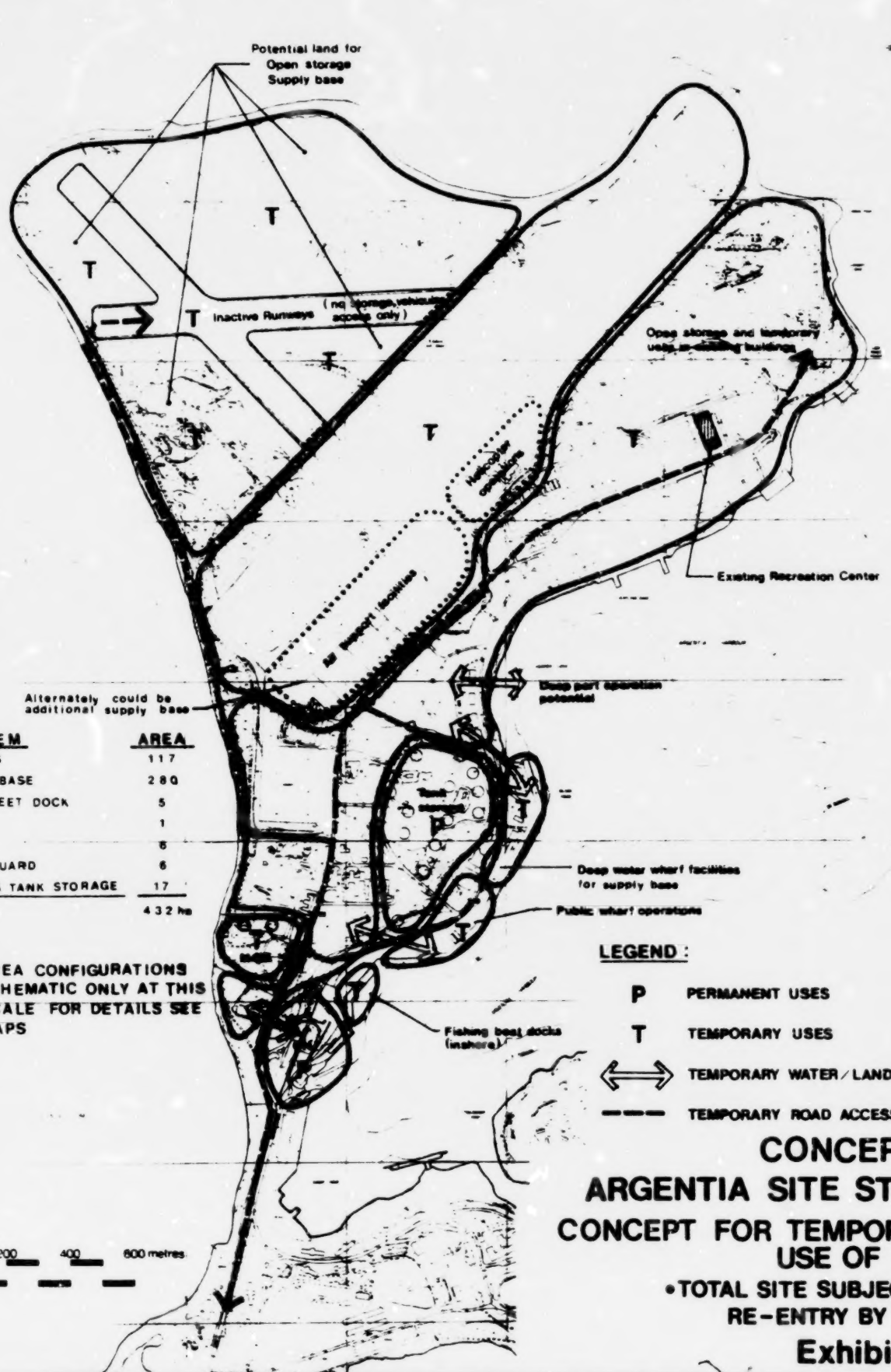
(2) Could also serve the fabrication yard.



ITEM	AREA
RUNWAYS	117
SUPPLY BASE	280
HALF FLEET DOCK	5
SCH	1
CN	6
COAST GUARD	6
EXISTING TANK STORAGE	17
TOTAL	432 ha

NOTE: AREA CONFIGURATIONS SCHEMATIC ONLY AT THIS SCALE FOR DETAILS SEE MAPS

LEGEND:

- P — PERMANENT USES
- T — TEMPORARY USES
- ⟺ — TEMPORARY WATER/LAND ACCESS
- ——— — TEMPORARY ROAD ACCESS

CONCEPT 3
ARGENTIA SITE STUDY
CONCEPT FOR TEMPORARY USE OF SITE

•TOTAL SITE SUBJECT TO RE-ENTRY BY U.S.A.

Exhibit 33

TEMPORARY LAND USE:
CONCEPT 3

The final land use concept is based on the premise that the U.S. right of re-entry clause would not be removed. Under these conditions, no permanent investments are likely. Therefore, the site could only be used for two main purposes:

- temporary supply base for storage where minimal investments are required;
- possible use of runway 07-25 (magnetic bearing).

Exhibit 33 opposite illustrates such an arrangement.

Air Operations

Runway 07-25 (magnetic bearing) would be developed as described in Concept 2. Total area involved would be about 117 hectares.

Storage Tanks

The underground storage tanks would remain since the uncertainty of future re-entry would not warrant any large capital expenditure other than perhaps for maintenance and/or upgrading. The total area involved would be 17 hectares.

Storage/Supply Base

The same approach would be used for the development of a supply base as described in Concept 2. The total area, however, would be significantly larger, consisting of 273 hectares. Given the long-term possibilities for the base, it would be rated lower in terms of realization than the fabrication yard.

Fleet Dock

The same approach would apply as described in Concept 2. It would be difficult to imagine any large capital investment being made to upgrade the fleet dock without some sort of longer-term guarantees. This is discussed in more detail in Chapter XII.

COMMUNITY INFRASTRUCTURE

A preliminary examination was made of the social infrastructure requirements that would emanate from the three development concepts. Our general finding was that close to 60 to 80% of the labour force could be drawn from the five local communities. In addition, social infrastructure such as building lots, schools, retail stores, hospitals, etc., did not appear to present any major problems in responding to the requirements of the development concepts.

CONCLUSIONS

The Argentia site, given its natural and physical attributes geared primarily to offshore development, has excellent development potential. The extent to which these prospects can be realized will depend on the extent to which regulatory adjustments and changes to the existing U.S. lease agreement can be made. Key conclusions are summarized as follows:

1. Re-Entry Rights Determine the State of Land Use Development.

   Development of the Argentia site will hinge on what is negotiated in removing the U.S. re-entry clause. Three land use concepts have been prepared based on full removal, partial removal and no removal of the re-entry rights.

2. Three Land Use Development Schemes are Possible.

   Concept 1 is based on full land use development and could include a petrochemical complex, fabrication yard, supply base and light-industrial park. Potential runway operations would be excluded. Concept 2 is based on partial development for a fabrication yard, supply base, light-industrial park and runway development. Concept 3 includes a supply base operation coupled with the reactivation of one runway.

ARGENTIA INDUSTRIAL AREA STUDY

EXHIBIT 34

POSSIBLE AREA OF MAJOR[1] INFRASTRUCTURE EXPENDITURES

	CONCEPT 1	CONCEPT 2	CONCEPT 3	REMARKS
1. HARBOUR				
1.1 Approach Dredging	X	-	-	Entry to Argentia harbour needs dredging from 6.75 to 9 fathoms to accommodate oil tankers and bulk carriers.
1.2 Fabrication Yard Dredging[2]	X	X	-	Depending on the final yard scheme dredging may be required 4 to 12 m.
1.3 Fleet Dock Upgrading	X	X[4]	X	Fleet dock is in a deteriorated condition and needs rehabilitation. Concept 2 may require an expansion by 150 m[5].
1.4 New Deep Dock	X	-	-	Possible deep 500 m dock could be required. WAG estimate.
2. TRANSPORTATION				
2.1 Off Site Road[3]	X	X	-	Minor upgrading of road likely to accommodate traffic. Bypass at Dunville may not be required.
2.2 On Site Road	X	X	X	Minor upgrading on proposed arterial road likely.
2.3 Rail (2300 m) Site Spur Line)	X	X	-	Spur line has been unused since site abandonment and may require rehabilitation.
2.4 Runways & Helicopter Base	X	X	-	Upgrading to minimum standards.
3. MUNICIPAL SERVICES				
3.1 Water	X	-	-	Major water supply required for Concept 1, however, some rehabilitation likely for Concept 2 and 3.
3.2 Sanitary Sewage	X	X	X	Rehabilitation required.
3.3 Storm	X	X	X	Rehabilitation required.
4. UTILITY				
4.1 Electricity (Underground)	X	X	-	Upgrading required.
4.2 Telephone	X	X	-	Upgrading required.

NOTES:

1) Based on assumption that developer absorbs his "on property" costs.
2) Depends on type of yard constructed.
3) Needs further investigation but probability low. Need Manpower location study of passenger traffic.
4) Possible extension of fleet dock to accommodate full supply base.
5) Based on ADC Limited's proposal.

3. Conflict in Land Use Functions between Existing and Proposed Developers.

When the requirements of proposed developers are superimposed on existing industry at Argentia, conflicts in land use are apparent. Each of the development concepts has been developed to accommodate a "best use" approach. They do not necessarily coincide with the various developers' requests and will require resolution by the Department of Development.

4. Proposed Development of Argentia Requires Adjustment of Existing Regulations.

Regulatory and jurisdictional adjustments would be necessary in order to implement any of the land use development concepts. For example, the development of a supply base requires dedicated wharf space. Since these are public wharves, policy would have to be changed.

5. Land Use Development Must Incorporate Flexibility.

Given the uncertainty in the way offshore resources are likely to develop, the land use plan should maintain maximum flexibility to respond to changes. It is a guideline for the future and should be reviewed periodically.

Finally, some degree of expenditure will likely be required for certain major infrastructure adjustments (e.g., harbour, transportation, municipal services and utilities). Exhibit 34 opposite provides a first approximation of those areas where infrastructure adjustments might be required and forms the basis of the cost estimates discussed in the next chapter.

It should be noted that large sized maps of Exhibits 31, 32, and 33 are located in the back of this report.

XI - INFRASTRUCTURE ASSESSMENT AND COSTS

GENERAL

This chapter deals with a summary of the infrastructure assessments which are reported upon in Volume 2 - Appendices. At the level of this report, the estimates of cost are approximations in 1982 dollars given to show the order of costs related to each component of infrastructure. In some cases, options are given in terms of capacity of facility or scope of refurbishment and judgments will have to be made in selecting from these options for overall costs. Detailed studies should be carried out if it is decided, based on the above information, that more refined estimates of costs are necessary for any component.

The estimates are for construction only and, unless otherwise indicated, 10 percent should be added to cover engineering.

WATER SUPPLY, DISTRIBUTION AND FIRE PROTECTION

The existing water supply from the Clarks Pond System is adequate to serve all proposed developments on the North Side except a petrochemical complex. The U.S. Naval Facility South Side propose installing a treatment plant on their alternate Argentia Pond supply and abandoning the Clarks Pond system[1]. It has been previously proposed that this would incur the need for a by-pass supply line around the South Side. It should also be realized that the U.S. Navy would retain their two storage reservoirs to which water from Clarks Pond is presently pumped and from which both the South Side and the North Side draw. Thus a North Side elevated reservoir would be necessary and it could be sized to provide fire protection.

The existing water distribution system network is basically sound but needs some repair of leaks, and repair or replacement of appur-

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(1) This plan is now rescheduled to beyond 1985.

tenances. A higher density of hydrants is also required for proper standard of fire protection depending on nature of buildings to be protected.

A cost estimate is shown in Exhibit 35 below:

EXHIBIT 35

COST ESTIMATE FOR WATER SUPPLY, DISTRIBUTION AND FIRE PROTECTION

ITEM	COST	APPLICABLE TO CONCEPTS
South Side By-Pass Water Transmission Line (beyond 1985)	$ 750,000.	1, 2, 3
Pumping Control System	50,000.	1, 2, 3
North Side Elevated Reservoir Options		
- Restore existing 750 m^3 (200,000 U.S. gal.) if feasible	200,000.	3
- New 750 m^3 (200,000 U.S. gal.) (1)	400,000.	3
- New 2700 m^3 (600,000 I. gal.) (2)	800,000.	1, 2
- New 8000 m^3 (1.8 million I. gal.) (3)	1,800,000.	1, 2
Refurbish Distribution Network		
- Minimum	70,000.	3
- Intermediate	150,000.	1, 2
- Full	250,000.	1, 2
Minimum Total	$1,070,000.	
Maximum Total	$2,850,000.	
Major Water Supply Addition For Petrochemical Complex	5,000,000.	1

(1) Minimal volume
(2) Light industrial park standard of fire protection
(3) Full standard fire protection assuming largest buildings are utilized

SEWERAGE SYSTEMS

The North Side is serviced with conventional sanitary sewer and storm drainage systems much of which are partly or fully blocked with combinations of sludge, grit and gravel and in one section solidified crude oil.

A portion of the sanitary sewer system drains to a single sewage pumping station which pumps via a 300 metre long force main to a gravity portion of the system. This drains to a primary sanitary sewer outfall on the exposed shore of the west side of the peninsula. The primary outfall only extends to the beach as it was apparently damaged by sea action early after construction. A number of other smaller and separate areas are served by combined sewer gravity systems which discharge small sanitary sewage flows and storm flows, some into Argentia Harbour. The main remedial works will involve, cleaning, inspecting and repairing sewers, reinstating the sewage pumping function and reinstating the primary outfall for proper dispersion of discharge. Sewage treatment for the whole facility will probably not be required but comminution of large discharges will be.

The storm sewer system is completely gravity with numerous outfalls into the Harbour as topography and development configuration required. It includes surface drains, underground pipe system, some grease separation pits and some combined sewer functions. The main remedial works will involve, cleaning, inspecting, repairing, replacement (especially wooded pipe sections) and generally responding to surface regrading by developments.

A cost estimate is shown in Exhibit 36 below:

EXHIBIT 36

COST ESTIMATE FOR SEWERAGE SYSTEMS

ITEM	COST	APPLICABLE TO CONCEPTS
Refurbish Sanitary Sewers		
- Minimum	$100,000.	3
- Maximum	200,000.	1, 2
Sewage Pumping Station	80,000.	1, 2, 3
Outfall Repairs	150,000.	1, 2, 3
Comminution	70,000.	1, 2, 3
Minimum Total	$400,000.	
Maximum Total	$500,000.	
Refurbish Storm Sewers		
- Minimum	100,000.	3
- Maximum	500,000.	1, 2

SOLID WASTE DISPOSAL

Initially or for limited development, domestic and industrial waste could be disposed of at local municipal sites. As a supply base or major other development occurred, a new landfill site would have to be developed and could become a joint regional facility used also by municipalities. Scrap metal would be open stored in designated site until quantity justified consolidation and shipment. Developers have indicated that up to 4500 tonnes/year of solid waste could be generated by full supply base and fabrication yard development and up to 1000 tonnes/year of scrap metal.

A 5 to 10 hectare landfill site should be selected off the peninsula at a location which would meet public and environmental approval.

Estimated cost for development of a sanitary landfill site allowing for reasonable access, clearing and grubbing, drainage, grading, roadway and initial disposal trench excavation is $150,000., applicable to all three concepts.

ELECTRIC POWER SUPPLY AND DISTRIBUTION

The North Side central steam power plant is not salvageable; the underground cables in ducts are of unknown condition and have been vandalized by copper thieves. Power is supplied to the site by Newfoundland Light and Power Company Limited from a relatively new overhead 12.5 KV transmission line. No difficulty would be anticipated in supplying the indicated power requirements of up to 12 megawatts for a large supply base and fabrication yard. The Company normally prefers overhead distribution, but in a supply or fabrication yard this would be dangerous and most electrical distribution would have to be underground with capital cost paid or contributed to by the developer. This cost is quite indeterminate at this time, but a figure of up to $250,000. to rewire the site has been indicated by a developer.

Street lighting is provided by the Company at an annual cost to the authority responsible for services and this is recovered by taxes or service fees. Yard lighting and other internal works would be the developer's cost.

TELEPHONE/TELEX

For new development, new lines would have to be run from the Newfoundland Telephone exchange at Freshwater. Developers have indicated a combined total of up to 1000 lines at full-scale development for telephones, telexes, faxers, computer links, radio hookups, etc. The Company would have no difficulty in providing even this apparently high estimate of requirements given 18 to 24 months for network review, design and construction of cable systems.

Lines are provided by Newfoundland Telephone and each customer pays an installation fee for the equipment required. Ducting underground would in general have to be paid for by the customer and a developer has estimated a cost of $56,000.

FUEL BUNKERING SYSTEM

Of the 15 existing underground fuel tanks, five are leased to ERCO for storage of Bunker C and two to Allied Chemicals for calcium chloride. A developer proposes to incorporate at least two of the unused tanks in a system for bunkering supply vessels and offshore rigs and platforms at a basic system cost of $291,000. and an extra cost of $7,900. per berth serviced.

The question of these tanks, in terms of cost of restoring and importance to the final scheme, should be examined in more detail at the appropriate time. Perhaps the 17 hectares could be used more advantageously for other uses and any necessary tank system built above ground at a strategic location.

SURFACE TRANSPORTATION

Road

There is a paved road connection from the site to the Trans Canada Highway. Road distance to St. John's is 140 km. However, it may be desirable to construct a by-pass road around Dunville to avoid populated built-up areas and ribbon development in the Dunville area. The problem at Dunville is not only slow down of traffic but also danger to inhabitants of high traffic volumes.

The highest traffic period for the kind of development shown in the concepts would be during the construction period and especially during a period of construction combined with initial operations. After construction, most traffic would be generated by visitors and work force. A study of labour force profile and locations as well as likely interactions with St. John's would be warranted at an appropriate time to estimate the long-term traffic past Dunville and review the justification for the road.

The overall length of the projected route is 13.7 km and the recommended standard RCU80 with 3.5 m paved lanes plus shoulders with

0.5 m paved and 1.0 m gravel. Climbing lanes would be provided.

Estimated cost, including engineering, is $7.5 million.

Rail

A Terra Transport Rail branch line has served the port, including the fleet dock, and the main branch line is still an active part of the railway network. To serve the fabrication area designated on the concepts, an extension of some 2300 metres would have to be constructed/refurbished together with necessary sidings. The branch line extension would cost in the order of $300,000.

If efficient ocean cargo facilities are developed at Argentia and especially if the Dunville highway by-pass is built, there may be little role for the railway in serving the offshore oil-related industries after construction and initial-period abnormal loads have ceased. Conversely, if most of the goods could be brought to the site by rail, the Dunville by-pass may not be required other than to eliminate through-traffic hazards to residents of Dunville.

Internal Roads

The North Side is served by a network of paved main roads and gravel access roads interconnected with each other and with parking areas and former aircraft ramps. The roads are in reasonable condition with some cracking of pavement especially on the edges and need for grading of gravel roads. The road drainage needs to be improved in some instances.

The existing road system is an important asset and proposed developments have incorporated as much of it as possible. Depending on the scope of development, the main arteries may have to be improved and widened and a general recapping of pavement carried out. Should segregation of various development areas occur for control or military security reasons, then new arterial links could be necessary. The cost of internal road work will depend on the

ultimate development scheme; however, for present purposes, a cost of $1 million is a reasonable estimate to deal with repair and recapping of existing paved roads and regrading gravel roads including minor drainage improvements. Such expenditure would only be made in a phased manner as required.

HARBOUR AND WHARF FACILITIES

General

Argentia Harbour is ice free and open for year-round operation. The basin is well protected from winds and waves in all directions and does not require breakwater protection. At present, entry to Argentia Harbour is limited by the 12 metre (6-3/4 fathom) water depth.

The fleet dock wharf, some 814 metres in length and generally in poor repair, is located along the west side of the harbour.

Fleet Dock

The condition of the fleet dock has been reviewed by previous investigation section by section. A report dated January 1978 by Albery Pullerits Dickson and Associates, consultants to the Canadian Kellog Company Limited, gave the results of the investigation and indicated estimates of cost which have been updated for this report. The section-by-section condition and cost estimates are given in the Appendices.

The level of dock reconstruction will vary for each concept and its phasing but it should be realized the fleet dock requires major rehabilitation. Obviously, the extent and cost of the work required cannot be really ascertained until a final scheme is determined, including high load and heavy-lift areas, and an engineering assessment made.

On an overall basis, the present-day estimate of cost to provide proper repair and reconstruction at original standards is $3.4 million. Total replacement would cost approximately $13 million.

If the repair and reconstruct option were adopted, the expected life span would be extended by about 12 years, considering that the basic structures are already about 35 years old and have not been kept in reasonable repairs. It is estimated that after the 12 years of operation, repairs would be about 16 percent of installed value per year, which will result in complete replacement during the subsequent 6 years under operating conditions.

New Development Requirements

The improvements and facilities required by the development concepts are as follows:

Concept 1

(a) Rehabilitate Fleet Dock, full 814 metres. Estimated cost is $3.4 million[1].

(b) New deep water wharf for tankers, etc. Area could accommodate an estimated 500 metres long in a straight line scheme. Estimated cost is $10 million.

(c) Dredging for approach 750,000 m^3 for 15 metre draft ships like a 100,000 DWT tanker. Estimated cost is $4 million.

Concept 2

(a) Same as (a) in Concept 1. Estimated cost is $3.4 million.

(b) Under Lundrigan TriOcean Ltd./Foster Wheeler Study:
- dredging to 4 m & 12 metres for module and platform deck fabrication respectively. Estimated cost is $1.5 million which includes engineering.

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1) It should be noted that the level of dock rehabilitation will vary for each concept. For costing purposes, the maximum figure is taken. Reconstruction for heavier loadings and heavy lift areas would be at higher cost.

- graving dock for integrated steel platform deck construction. Estimated cost is $4.6 million, including engineering.

(c) Under Argentia Offshore Contractors proposal:

- 75 m piled quay to load barges with modules and handle incoming supplies (Phase I & II). Estimated cost is $1.4 million.
- 1300 m^2 building dock at north end of yard to handle integrated steel platform decks (Phase III). Estimated cost is $7 million.

Concept 3

(a) Same as (a) in Concept 1. Estimated cost is $3.4 million.

EXISTING BUILDINGS

Certain buildings on the North Side are deemed to be re-usable for new development. Considerable repair and modification will be required, and in some cases not all the original building is re-usable.

Various estimates of cost have been put forward for refurbishing depending on proposed use. These are contained in a number of documents, some of which are confidential at this time; we shall not attempt to summarize them in this report.

The question of who pays for refurbishing the buildings will depend on government policies, for example:

- does the private developer pay this cost?
- does the Province renovate the buildings and lease them to the developer?

For the purposes of this report, we have assumed that rehabilitation will be paid for by the developer.

ARGENTIA INDUSTRIAL AREA STUDY
EXHIBIT 37
PROPOSED RE-USE OF EXISTING BUILDINGS

Building	Previous Function & Area (sq. metres)	Construction Type	Condition	Proposed Functions & Area (sq. metres)
593	Hangar 11,400 Workshops 7,600	Steel frame hangar concrete workshops	Poor	a. Warehouse 15,200 b. Salt storage & bagging (1 bay)
614 Readiness Hangar	Aircraft hangar 1,850	Steel frame aluminum cladding	Good	a. Warehousing 1,850 b. Pipe inspection 1,850
565	Aircraft maintenance 7,000 Base administration 3,400	Steel roof trusses reinf. conc. structure various wall mat'ls	Structure good envelope poor	Fabrication engineering offices, training, storage 8,760
13	General storehouse and offices 7,000	Reinforced concrete 3 storeys	Fair	a. Controlled atmosphere storage & small parts storage (as alternat to 593) b. Office space & specialized storage
81	Temporary aircraft storage 1,660	Wood frame	Good	a. Warehousing (as alt. to 593) b. Office space & specialized storage
7	Aviation storehouse 1,600 1st floor 1,040 mezzanines	Structural steel & wood	Good	a. Vehicle & equip. mai b. Specialized storage & office c. Machine shop marine repair
58	General storehouse 4,700 (1st floor presently seasonal fish plant)	Reinf. Conc. 3 storeys	Good	Offices & canteen
16	Fire Station 780	Structural steel & wood	Good	Chandlery warehouse w/offices 780
Dockside Office	Laboratory & offices 480	Wood frame	Very Good	Offices, laboratory & store 480
Dockside Warehouse	Warehouse 1,480	Steel frame metal cladding	Poor	Warehousing 1,100
3	Seaplane hangar & base administration 11,900 (presently Nfld. Forest Protection Service)	Steel frame various wall mat'ls	Structure good Envelope Fair	Warehousing, workshops, fabricating, training 9,500

With regard to building condition, we would caution that several reinforced concrete buildings have leaky roofs, and structural concrete and slabs could be deteriorated internally due to absorption and freeze-thaw cycles.

Exhibit 37 opposite gives a general summary of the characteristics of the buildings of note and the uses proposed by various potential developers.

XII - STRATEGIC DEVELOPMENT CONSIDERATIONS

Future development of the Argentia site will be directly affected by the extent to which various jurisdictional constraints can be resolved. This chapter suggests some possible negotiating strategies and comments on the type of mechanism that will be required to oversee and administer site development.

JURISDICTIONAL PROBLEMS

In order to fully realize the potential benefits for the Argentia site arising from offshore development, the Department of Development will have to address two jurisdictional problems:

- existing covenants as specified in the "TREATY SERIES 1978 No. 14";
- complex division of authority between the federal and provincial governments.

Covenants

Existing covenants in the Treaty, as discussed in Chapter IV, limit the type of land use development possible on the designated site. Of all the covenants, the re-entry clause is the most restrictive since it will discourage any long-term capital investment in plant and machinery. This issue has already been raised by all of the prospective developers.

A lesser problem is posed by the shipping covenants, which restrict any vessel traffic in the Argentia Harbour area belonging to the East Bloc countries. This is not expected to be a major problem insofar as offshore development is concerned, but could present restrictions for the export of fishery products.

Canada does have a significant fish trade with East Bloc countries, and the shipping covenants might inhibit expansion of cold storage and transshipping operations as well as fish processing operations. Further investigation will be required into the extent of such ramifications.

Federal/Provincial Jurisdictions

In view of the complex division of authority between the federal and provincial governments, the Argentia development mechanism could become quite cumbersome.

The following will serve as an illustration:

- MOT administers and is responsible for wharves, essentially controlling land/water entry;
- the Canadian military have first priority in the use of the fleet dock for fuel functions;
- the Province has administrative responsibility for the area;
- any final land use plan or changes to present use will be subject to MOT, Base Commander and U.S./Canada approval procedures, which are handled through the American State Department and External Affairs.

It should be noted that adjustments in re-entry for some of the areas have been requested by the provincial government in the early part of this year. At the time of writing this report, no reply has been received.

NEGOTIATING STRATEGIES

What strategies, then, are available to minimize the whole procedural process related to each stage of development (i.e., planning, design, development and operations)?

Lease Agreement

Since the U.S. already has a presence on the south side of Argentia, it is reasonable to assume that the right of U.S. vessel entry to their docks would be of paramount interest. This is borne out by the fact that the Argentia Base was a naval base with runways as support; it was not an airbase per se. Therefore, it is also reasonable to assume that if access to the site can be maintained or even enhanced, the U. S. would not pose any serious objections. Given today's greater reliance on aircraft carriers, it is doubtful that airport bases are of high priority (considering the closing of the Goose Bay and Stephenville bases).

In addition, it is unlikely that the U.S. would want any vessels that are unfriendly to be nearby.

A precedent has already been set for revocation of the re-entry clause (e.g., Stephenville). However, the federal/provincial governments may wish to offer certain inducements to the U.S. For purposes of illustration, these could include such items as:

- site area for a communications station;
- supply base or land elsewhere in Newfoundland;
- upgrading of dock facilities at their existing location.

The second important consideration in the negotiations is to target the whole designated site (Concept 1) as a starting point. It would be up to the U.S. to indicate (if they are prepared to do so) what their bottom line is. This would, in turn, help identify more clearly their major interests and concerns. Concept 2 and Concept 3 would then serve as fallback positions for Canada.

It has to be recognized that all three development concepts involve land/water access, and this virtually negates the "raison d'être" for the naval base. In spite of the size of the task, there is some indication that with the right lobbying support (e.g., oil companies), the federal/provincial governments could be successful.

Another possible avenue to explore may be for the governments to provide some sort of guarantees or assistance to the developers, should the U.S. invoke the re-entry clause. While this may help to relieve the concerns of the developers, it would still undermine confidence in the investment industry to the point where it could adversely affect decisions to locate in Argentia.

Federal/Provincial Jurisdictions

The success of Argentia will, in large measure, depend upon the ability to respond quickly and efficiently to demands and needs in the marketplace. A division of responsibility may seriously retard this function.

Much will depend on the rapport among the various parties and the compatibility of ideas and plans.

PROMOTIONAL EFFORTS

The fact that Argentia is located in an ideal position and has natural attributes does not, in itself, guarantee success. Examples of other industrial land developments indicate that not only must the site have the necessary infrastructure in place, but it has to be vigorously promoted. Oftentimes, incentives and assistance are required to generate enough momentum so

that industries locate and grow in the designated areas.

Finally, it should be recognized that the Argentia site will be competing with other potential sites in Newfoundland, elsewhere in the Maritime Provinces and, possibly, in Quebec and Ontario. Competition is expected to be extremely strong. While the Province can legislate greater local participation, commercial economics will be the major determinant in site development.

ORGANIZATIONAL STRUCTURE

It would appear that the responsibility for negotiations, coordination, planning, design, financing and property management would best be undertaken by one single organizational structure.

While funding would be required initially, it should be done on the basis that the agency becomes financially self-sufficient over time.

An institutional arm, such as Industrial Estates Limited located in Nova Scotia, could be an appropriate type of structure. This is a provincial crown agency established to encourage the development of secondary industry. It identifies and gathers industrial intelligence opportunities in both North America and Europe. To date, it has approached over 200 clients, of which 30 have located in Nova Scotia.

The structure could take various forms, such as:

- joint federal/provincial agency or simply a provincial agency;
- joint private/public agency;
- provincial crown corporation;
- an extension of an existing provincial department.

Whatever the structure, some sort of mechanism will be required, if for no other purpose than to provide continuity in the land use planning exercise.

MAPS